REPORT RESUMES

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INDIANA MANPOWER RESEARCH ASSN., LAFAYETTE

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SIXTY-SEVEN REPRESENTATIVES OF EDUCATION, LABOR, BUSINESS AND GOVERNMENT AGENCIES PARTICIPATED IN THE CONFERENCE SPONSORED BY THE INDIANA MANPOWER RESEARCH ASSOCIATION WHOSE OBJECTIVES ARE TO FURTHER RESEARCH EFFORTS AND TO FACILITATE OPTIMUM USE OF RESEARCH RESULTS BY COORDINATING EFFORTS AND DISSEMINATING REPORTS, STUDIES, DATA, AND INFORMATION CONCERNING MANPOWER RESEARCH. THE PRESENTATIONS WERE--(1) "DEVELOPING INDIANA COUNTY POPULATION PROJECTIONS" BY J. WENTWORTH, (2) "STATE POPULATION PROJECTIONS" BY R. CALHOUN, (3) "PREVIEW OF THE 1970 CENSUS OF POPULATION AND HOUSING" BY T. OLSON, (4) "SOME FINDINGS OF THE MICHIGAN MANPOWER STUDY" BY J. DUNCAN, (5) "INDIANA MANPOWER TRENDS TO 1975" BY M. HELLER, (6) "PERSONNEL SKILL DATA SYSTEM" BY F. NICKLAS, (7) "PROGRAMS AND GOALS OF A UNIVERSITY HUMAN RESOURCES INSTITUTE" BY E. LIEBHAFSKY, (8) "SKILL DEVELOPMENT AMONG THE UNDERPRIVILEGED" BY W. STAFFORD, (9) "INDUSTRY'S PARTICIPATION IN THE NATION'S EDUCATIONAL PROGRAM" BY R. HADDEN, (10) "LABOR'S VIEW OF CURRENT MANPOWER PROBLEMS" BY M. FRIEDMAN, (11) "NEW DIRECTIONS IN MANPOWER RESEARCH AT THE FEDERAL LEVEL" BY J. EPSTEIN, AND (12) "IMPLICATIONS OF A POSITIVE MANPOWER POLICY ON EMPLOYMENT SERVICE RESEARCH" BY V. CHAVRID. INFORMATION ABOUT THE INDIANA MANPOWER RESEARCH ASSOCIATION, BIOGRAPHICAL SKETCHES OF THE SPEAKERS, AND A LIST OF CONFERENCE PARTICIPANTS ARE INCLUDED. (MM)

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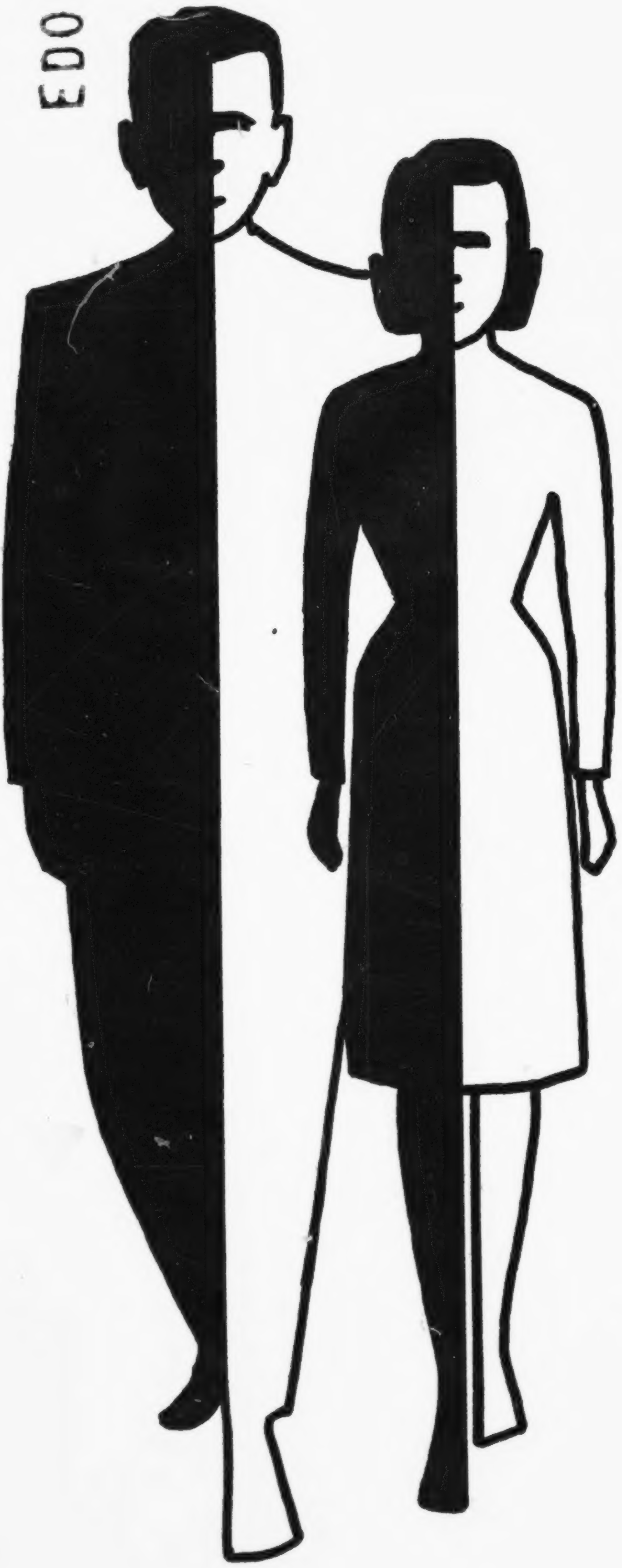

INDIANA MANPOWER RESEARCH CONFERENCE

1966 Proceedings

November 15-16
Purdue University

VT 02655

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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1966

PROCEEDINGS

INDIANA MANPOWER RESEARCH CONFERENCE

NOVEMBER 15-16

PURDUE UNIVERSITY

PREFACE

The Manpower Research Conference held November 15-16 at Purdue University was the second to be sponsored by the Indiana Manpower Research Association. It should be noted that the Association itself was formally constituted when the 1966 conferees adopted the "Statement of Purpose and Charter" reproduced on page iii. Before this action was taken, a less formally structured group of individuals interested in manpower research had banded together to sponsor the 1965 Conference, and to act as a clearing house for information about research projects and proposals.

The third annual conference has now been set for Indiana University, November 29-30, 1967. Those who have attended previous conferences, or who are on the Association's mailing list, will receive further information as soon as the speakers can be committed.

The Editor of these Proceedings has a number of debts to acknowledge: to the 12 speakers either for the preparation of a formal paper, or for editing the recorded transcript of their remarks; to Professors J. P. Lisack and Joseph Arnold, Purdue University, who shouldered the main burdens of conference arrangements and administration; to Mrs. Thomas Ringo, whose professional typing, and uncanny ability to decipher the Editor's unprofessional markings, contributed substantially to this production; to William F. Kaeser, who fashioned the charts and graphs and whose design enhances the cover.

Dale G. Brickner
Editor

THE INDIANA MANPOWER RESEARCH ASSOCIATION

Statement of Purpose and Charter

The Indiana Manpower Research Association is an independent, nonprofit organization concerned with manpower research, and the development and utilization of manpower data for the benefit of Indiana. It is comprised of members who conduct manpower and related research and those who utilize resulting findings or data.

The members of this Association agree to cooperate in furthering research efforts and to facilitate optimum use of research results. This will be done by coordinating efforts and disseminating reports, studies, data and other information.

The executive agent of the Association will be the Indiana Manpower Research Coordinating Board. Membership of the Board will be broadly representative of Academics, Business, Government and Labor, and will be elected by a majority vote of the Conference members. This Board will arrange for conferences, communications, data compilation, reporting and exchange of information. The Board will represent the Association in maintaining liaison with individuals and agencies wherever considered to be beneficial and in consonance with the Association purposes.

The Board will be responsible for developing policies and recommendations for possible Association adoption regarding Association and Board membership, assessments or fees, procedures, and other related matters.

A Chairman and a Secretary of the Board, and such other officers as may be needed, will be elected by a majority vote of the Board members.

Coordinating Board

Indiana Manpower Research Association

Chairman: Dwight Kelley,
Indiana Employment Security Division

Secretary: J. P. Lisack,
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Treasurer: Dale G. Brickner,
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Members: William Andrews,
Indiana University

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Ball State University

Martin Heller,
Indiana Employment Security Division

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Indiana Department of Commerce

James Walker,
General Telephone Co.

Jack Wentworth,
Indiana University

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Robert J. Hadden -- BSEE University of Michigan 1951, Graduate Studies Harvard Business School and Johns Hopkins University. Experience with Westinghouse, positions of Program Manager of Nuclear Instrumentation, Manager, Program Support, Systems Operations, and Supervisor Field Installation NAJ Program. Author of numerous articles on various aspects of business management. Presently Director of Atterbury Job Corps Center for Westinghouse, Camp Atterbury, Indiana.

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William F. Stafford -- B.A. Business Administration, North Carolina College 1939. Business experience with P. R. Mallory and R.C.A. Victor. Government experience as vocational consultant with Marion County Dept. of Public Welfare and Indiana Civil Rights Commission. Member of Indiana Conference of Social Workers, Citizens Forum, Urban League, and Federation of Associated Clubs. Presently Associate Director, Community Action Against Poverty for Indianapolis.

Jack Wentworth -- B.S. Business, Indiana University 1950, Ph.D. Business, Indiana University 1959. Experience includes three years as management analyst for the Air Force, and two years as budget director for the Cadillac Company. Member American Marketing Association, Beta Gamma Sigma, Delta Sigma Pi and the Indianapolis Economic Forum. Presently Professor of Economics and Director of the Bureau of Business Research, Indiana University, Bloomington, Indiana.

PROCEEDINGS

DEVELOPING INDIANA COUNTY POPULATION PROJECTIONS

Jack R. Wentworth
Director, Bureau of Business Research
Indiana University

Introduction -- Thank you, Bill! It's a real pleasure to be here, particularly so close to the great battle this coming Saturday. If you don't find me around this afternoon, its probably because I'm over doing a little scouting for John Pont. There definitely is a fragrance of roses around here -- no question about it! We're still suffering from a pretty good case of hay fever down in Bloomington these days. However, this has very little to do with population, although I will say we're hopeful that our population will be growing bigger size-wise in the near future.

I would like to talk with you for a few minutes today about a project which was recently completed by the Bureau of Business Research at the Graduate School of Business at Indiana University. This project involved projecting Indiana population on a county-by-county basis to the year 1985. The results of the study were published as of this week in a two-volume report, the details of which I will discuss in a few minutes. I might add, however, that the report forms a part of the study design for the state plan being undertaken by the Division of Planning of the Department of Commerce. The project itself was financially aided through a federal grant from the Housing and Home Finance Agency under the Urban Planning Assistance Program authorized by Section 701 of the Housing Act.

Obviously, I can not and do not want to get into a lot of the details of the study itself, and particularly the findings of the study. I hope you will all have a chance to see a copy of the study sometime in the very near future. What I would like to do first is talk a little bit about the purpose of the study -- why we got involved in this kind of thing -- and then tell you a little bit about the basic methodology. Finally, I would like to talk about the way it is presented in the two volumes -- that is, how it is communicated to be of most value to most people. Then, of course, during the discussion period, after we hear from Bob Calhoun, I will be more than happy to answer any questions any of you might have.

Purpose of Study -- The importance of the population projection for a state and its various regions and counties can hardly be overestimated. For planning on almost every conceivable level has to rely, at least in part, on estimates of future populations. I certainly do not want to get into a long discussion on the value of planning. This would certainly be obvious to a group such as this one. Likewise, the value of relatively accurate population projections is quite obvious -- not only to the state government, but to local communities, institutions, and, of course, even to individual businesses and individuals themselves. Thus, about two years ago, we felt there was a real need for a sophisticated study projecting population on a county-by-county basis for the State of Indiana. I might say that great thoughts come to many minds since, within the last two years, two additional population projections have been initiated. Nevertheless, we proposed the project, and as I indicated earlier, received substantial help through a government grant.

We felt that there were two relatively unique aspects to this particular population study -- the first is that in addition to the quantitative projections, which are incorporated into many studies, we intended to inject a certain subjective element, which we felt was quite important. All mechanical population projections must, by their very nature, be based on historical trends and assumptions developed by the researchers. We felt that there was one very important element left out of any simple mechanical projections, namely, the changes that would take place in the future within a given county. Incidentally, this factor is particularly important when talking about a small geographical area, such as a county. The larger the geographical area, the less you have to worry about these things because there is greater chance of an offsetting occurrence somewhere else. Let me take a simple example. If one were to project the population of Monroe County (that's the home of Bloomington, Indiana, and Indiana University) on a straight mechanical or objective basis, the rapid growth of the University, as well as the substantial industrial growth within the county, would definitely show up in past trends. However, within the last year, a new reservoir was completed by the Corps of Engineers, and Monroe County now has the largest lake in the state of Indiana. Thus, a whole new industry -- recreation -- will most likely open within the county. Certainly this development will have an effect on the future population of Monroe County.

It has been the policy of many demographers to say, "Okay, so you have a large new lake in Monroe County. We don't know what effect it will have on population specifically, so therefore, we'll just ignore it." Our point is that, YES, we do not know specifically what effect this lake will have on Monroe County's population, but we do know it will have an effect. So, let's take our best guess, and insert this into the projection; and even though it may not be perfect, the odds are excellent that it will be better than if it were ignored completely.

Thus, once the population projections were developed mechanically, the subjective element was introduced, based on research within the counties, to guide the reader to the most logical projected figure.

The second relatively unique element of this particular study is the fact that we intend to keep it up to date. We have all of the data programmed into the computer, and it is our intention that periodically we will insert up-to-date data and develop new projections with more current results. If nothing else, we hope that this will help educate people to the fact that these are not predictions, but rather projections of the way population trends look to us today. Only if the trends continue, would we know the population of a given county in a future year. Unfortunately, many times when projections are developed, people accept them as the word of God sent down on tablets, and they feel that the researchers are saying this is the way things will be. Through a periodic review of these projections, we hope we can readily indicate that changes in our projections actually do take place, and, in some cases, show why they take place. We are hopeful that having multiple projections for a given county will also provide greater insight into what is actually taking place within that county. Thus, the trend in projected figures for a given county might really be more meaningful than the actual projections themselves.

It must be remembered that population changes within any area are a function of a complex set of economic, social, and political factors, many of which cannot be anticipated. Furthermore, the projection itself may bring about changes that turn out to be self-invalidating. For example, a community may react to an "unfavorable" prospect by instituting a program to change the basic conditions that produce that forecast. Here again, we see the value of updating the projections time to time.

Basic Methodology -- In the development of the projections, two basic techniques were used. One was the U.S. Bureau of Census component method, and the other was the cohort-survival technique. After considerable study, it was determined that the primary technique should be a variation of the U.S. Bureau of the Census component method. This method calls for the separate treatment of three components: (1) fertility rates, (2) death rates, and (3) net migration. All of these are used to adjust census figures from the immediate past in order to produce a probable trend for the future. Because of our interest in and study of the cohort-survival technique, and because of its use in a number of recent population studies, cohort-survival was used to produce a second set of projections. The purpose of this apparent duplication was to provide confirmation of the component method, and to determine, to the extent possible, which of the two techniques provided the more satisfactory results. As you may know, the cohort-survival technique treats fertility rate changes, death rate changes, and net migration as a single factor and then projects population levels for each age grouping according to past trends. After considerable study and experimentation, we became convinced that the Bureau of the Census component method was superior and more realistic than the cohort-survival technique.

With that conclusion in mind, I would like to give a very brief and certainly superficial description of the development of the component method with regard to Indiana and its counties. The fertility rates were developed from data obtained from the Indiana State Board of Health. Since all births within the state must be certified, it may be assumed that the historical rates reported on fertility are valid. In general, it was assumed that fertility rates would continue the decline that began some years ago.

With regard to the death rates, we looked at the current Indiana survival rates and compared them with U.S. current survival rates. We then applied the projected U.S. survival rates (this has recently been done by the U.S. Bureau of the Census) to obtain projected Indiana survival rates. Both the Bureau of the Census and our research assumed a slight decline in mortality rates through the year 2010.

It should be pointed out that the determination of fertility and survival rates is a much more modest challenge than the prediction of migration rates. Births and deaths occur with a fair amount of regularity, and while significant shifts in their rates do occur, these can ordinarily be anticipated. Furthermore, fertility and death rates tend to vary little from area to area. In contrast, migration rates can change rapidly and vary tremendously from one area to the next. One major industrial facility moving into or away from a county may mean the difference between a positive and negative net migration pattern. There is need for further research in the area of migration patterns, indeed, we are currently working on a project which gives this area considerably more study. Our development of migration rates are still relatively crude, compared to some of the other techniques available to us. Basically, we took assumptions on migration and expressed them largely in terms of some proportion of past migration rates for a county or a region. It is also in the area of migration that the subjective judgments were developed, and modifications made in the actual mechanical projections. I will touch on this aspect more in a little bit. I will not spend more time at this point in discussing the specifics of the death rate assumptions, the fertility rate assumptions, and the migration rate assumptions. These are all spelled out rather specifically in the introduction to the report.

Suffice it to say that from these factors, three combinations of assumptions were developed that not only seem feasible at the present time, but also quite reasonable. These three combinations were used to project three series which we called Series A, Series B, and Series C. An oversimplified description of the assumptions underlying each series follows: Series A -- (1) slightly declining mortality to 1985, (2) a substantial drop in fertility to 1985, and (3) a zero net migration for all projection periods; Series B -- (1) a slight decline in mortality, (2) a very moderate decline in fertility from the 1950-60 level to the level of the 1985, and (3) a continuation of the 1950-60 net migration rates until 1985; Series C -- (1) a slightly declining mortality to 1985, (2) a substantial drop in fertility, and (3) a continuation of the 1950-60 net migration rates to 1985.

What all this amounts to is that Series C is probably the most appropriate for most counties, with the exception of the larger metropolitan counties that experienced high net in-migration rates during the 1950-60 decade but are now growing at a reduced rate. It may be interesting also to compare Series A with Series C in order to study the effect of two alternative migration assumptions -- that is, Series A with a zero net migration and Series C with a continuance of the 1950-60 net migration rate. The assumptions concerning birth and death rates for Series A and C are the same.

This is the point at which the subjective elements came into the study. The specific assumptions that are valid, and therefore the series that is used, are influenced by a rather subjective interpretation of what will be happening in a given county or region. Of course, these subjective factors are difficult to determine, and once determined, it is even more difficult to interpret their effect upon the population. In many cases, actual visits were made to the counties; in others, rather detailed questionnaires were sent to persons considered to have a leadership role within the community, and therefore within the county. Although we received an excellent response from these questionnaires, great care had to be taken in their interpretation. Needless to say, there would be a great tendency for a bias toward a more favorable climate, and therefore a larger population growth. Other data, in the records of the Bureau of Business Research, was also used in the development of the subjective factors which would influence the assumptions in projections used. Nevertheless, we are the first to admit that the underpinnings of this part of the study are less substantial than the underpinnings for the projections themselves. This is why all three series are presented in the report. And if a reader of the report, many of whom will be researchers themselves, knows more about the county in question, or if some subjective events have just taken place, then, in their best judgment, they may want to use a series other than that recommended by the study.

Presentations -- So much for the methodology. Let's talk a little bit about the two volumes themselves and the way the material is presented. As I indicated earlier, we tried to present the results of the study in such a way that it would not only be interesting to the casual reader, but also as useful as possible to the planner or researcher who might want to really dig in and grapple with the data.

Volume I, then, contains the more general results. It has a summary of the three series of projected population, showing the totals for the state, for the economic regions, and for the 92 counties, for each of the five-year projection periods, from 1965 to 1985.

Let me digress for just a moment, and mention briefly the economic regions that I have been referring to. As a part of the population project, the staff of the Bureau divided the State of Indiana into 13 economic regions. We feel that, in all probability, these 13 regions will become more meaningful as more and more data are developed in this particular fashion. As you can imagine, the county economic unit is really too small in many cases to take on much meaning. For example, a person could live in one county, work in a second county, and spend most of his money at a shopping center in a third county. By the same token, using the state of Indiana as a whole takes on relatively little economic meaning. The state makes an excellent political unit, but a not-so-excellent economic unit. As all of you know, the northern part of Indiana is quite different from the central part of the state, and southern Indiana is far different from either of the other two. Thus, the need for the economic region, which is made up of a cluster of counties, all of which are contiguous and have similar economic structures and profiles.

Volume I, then, in addition to providing an introduction and an explanation of the methodology involved presents graphically the A, B, and C Series population projections for the state of Indiana for each of the 13 economic regions, and finally, for the 92 Indiana counties. All three series projections are shown on one graph, and when we get down to the counties on the page facing that particular chart, we have a discussion of some of the subjective factors affecting that particular county, ending up with the research staff's conclusion as to which of the three series is the best projection for that particular county. In some cases, it may fall slightly above or slightly below a given series, and this is also indicated. Thus, the reader can graphically see the effect of each of the three series for a given county, he can read the text immediately facing it, see what particular series is recommended, and then really draw his own conclusions as to where he wants to go from here. Volume I also contains some summary tables for the state, the economic regions, and the counties, and then a substantial number of appendices, that in themselves can be quite useful. These include a reprint of an article defining Indiana's economic regions; a discussion of fertility rates, death rates, and migration rates; and a comparison of various population projection studies that have taken place in the state in the last year or two. This section includes the three series of the component method, the cohort-survival method, the Wabash River Basin Study done by the U.S. Army Corps of Engineers, and the recent state highway needs study projections. Here again, we feel we provide the reader with a helpful tool in analyzing projections for the state.

Volume II contains the more detailed projections, again on a county-by-county basis, for each of the series, and here it is broken down by 16 age groups or cohorts, as well as by sex. As I indicated, this is done for each series for each area, and for all the projection periods. Volume II then shows the figures themselves in a very detailed breakdown; and here again, this would be of most use to someone who is actually doing some planning or research of his own. The general trends and summaries can be established from Volume I, the details from Volume II.

Conclusions -- I said I was not going to throw out a lot of figures, and I'm not, but before concluding I thought you might like to hear a few of the findings of this population study. The state of Indiana had a population, according to the 1960 census, of 4,662,000 people. By 1985, we estimate that the population will be 6,268,000 people, or an approximate 34 per cent increase from 1960. Nevertheless, while Indiana is growing to this extent, we estimate that approximately 30 of the 92 counties will actually lose population between 1960 and 1985. I know that these are rather grim facts, particularly to the people within these counties -- and certainly they are in a position to do something about it. There is nothing that we would rather do in a few years, when updating this study, than to be able to put these counties in the so-called "plus" column. Nevertheless, that is as we see it at the present time.

It is interesting to note that all three series forecast a slight increase favoring females in the sex ratio. For example, if we look at Series A, by 1985 there would be 49.194 per cent males and 50.806 per cent females. This raises the female percentage from the current 50.697 to 50.806. Well, we can't fight that! Those are the general results for the state as a whole. I would be happy to give anyone information on specific counties, but I certainly do not want to bore you at this time with any more figures.

In conclusion, then, we feel we have a good study. We have tried to present it in the most meaningful and helpful way possible. By the same token, we have tried to present it in such a form that anyone with just a passing curiosity or interest would also find it easy to read. Volume I would certainly do that very nicely.

As I indicated earlier, we still feel that a great deal can be and must be done in the area of migration. This is the big unknown. This is the one area where the great challenge exists. We are currently in the process of studying the migration factor, and indeed developing a proposal for a major project along these lines. If this developes as we hope it will, then we would hope to have the first updating of the current study shortly after the migration study is completed. Certainly if the migration study is meaningful as we hope it will be, it would serve as a basis for revisions of this particular study.

Thank you for your patience and attention, and as I indicated earlier, I will be more than happy to answer any questions that I can during the discussion period at the end of this session. Thank you very much.

STATE POPULATION PROJECTIONS

Robert Calhoun
Director, Public Health Statistics Division
Indiana State Board of Health

I suppose that there are advantages to being the second speaker on a two speaker panel. Right now, however, I cannot think of any.

I would like to begin by giving some basic definitions, since I know many of you have not been working recently in the field of population estimates and projections. Population estimates, as we usually think of them, are based on data which are already available, or at least on events which have already occurred. For instance, we have available the 1965 population estimates which are based on the births, deaths, and migration which has occurred since 1960, and which is at least partially measurable. On the other hand, population projections go into the future and are based on trying to guess what will happen in such areas as births, deaths, and migration.

Population estimating, I would say, is tenuous at best. However, anyone who gets into the field of population projections has to be a little bit nutty. To give you an illustration of the difference between the two, we might estimate, while everybody is talking about the Purdue-Indiana football game, that I.U. is in pretty bad shape simply by reading the hospital list from the Michigan State encounter. But I refuse to make any projections as to the outcome of Saturday's game.

A couple of other terms should also be defined. One of these is natural increase, which is simply births minus deaths. Jack Wentworth has talked about fertility rates and I am not sure all of you are familiar with this term. It can be used, and is generally used, to refer to the number of births per 1,000 women in the 15 - 44 age group. However, it can be used more specifically in smaller age groups, frequently for intervals of five years and sometimes one year. When we talk about migration we generally mean net migration, that is, the difference between those moving in and those moving out of a particular area.

It was mentioned earlier that some people view estimates or projections as something that came down on a tablet from God or from some other high level. The other extreme occurs when an estimate is not exactly right and users look at the estimator as if he were a little bit crazy. We had one rather amusing situation. The mayor of an Indiana city has been on my boss's neck every year as soon as our population estimates come out. About a year ago, the city had a census taken. Our estimates, many of you know, are made just to the nearest hundredth, but it so happened that when the census was taken it agreed exactly with the estimate. I mentioned it to my boss, but I do not know if he mentioned it to the mayor. I heard someone in the audience say we were lucky, and that is right, it was lucky. Those of you who work with estimates know that they are subject to considerable error and that the actual degree of error is not measurable. In other words, one cannot say, "Well, an eight per cent error is too high," since if one knew the degree of error, appropriate adjustments could be made.

Now I am going to speak in more general terms than Jack, and refer primarily to the state population projections, and to various population groups within the state, rather than getting into the county field. And as you know, Jack, when you get into the county field, estimates really are tenuous. There are three major variables involved in projections, that is, three measurable variables. I am excluding any detailed discussion of economic and social factors which, of course, affect all of these variables.

I would like to make a very gross prediction about what is going to happen in each of these areas. Births (I am speaking of number, not rate necessarily) almost surely are going to increase. We have had a drop of 15 to 20 per cent since 1957. We are getting into an era when we will have a high proportion of younger people and we will shortly have an especially high proportion of people in the 20-24 year age group. Barring some national or some world catastrophe, it is almost certain that births will be on the increase in the near future. This does not, however, rule out the previously mentioned probability that fertility rates will continue to decrease, because even though fertility rates do decrease, births could increase, and probably will.

As for deaths, they too (and this is numbers) will increase almost surely. Our gross death rate has not been decreasing recently, and, of course, it does not take into consideration the various groups in the population. We have more 65-plus persons now, in proportion to the whole population, than we had ten years ago. And since this is by far the group most susceptible to mortality, it would have a disproportionate influence.

Now, as far as net migration goes, it would seem probable to me that there will be a leveling off of the negative trend observed in the past six to eight years. I have talked with a number of people over the past few years, and it is hard to believe that we are having out-migration in the state in view of its sound economic status. Nevertheless our estimates do indicate net out-migration and agree fairly closely with the Bureau of the Census. Although neither of us is in any sense the final word, the fact that we agree gives some credence to the probability that there is net out-migration, which we have estimated at some 125,000 persons between 1960 and 1965.

I might make one comment on what Jack said about fertility rates. Ed Thuma and I can raise an issue with him on that score, because in one of the counties close to him (Bartholomew), Ed and I figured that each woman in the county would have six to seven children during her fertility period. Of course, we arrived at that figure because in calculating the number of women in the fertile age groups, the thousandths place was omitted in the figures. So even people making population projections make mistakes.

Now, we find that there are differences in the relative importance of these three variables between large and small areas. For instance, in making an estimate of the population of the State of Indiana, the most important figure is the number of births. Historically, migration, although it has been somewhat a factor, has not really been a major one. For example, between 1950 and 1960 when the state experienced about a three-quarters of a million gain, less than ten per cent was due to positive net migration. However, when, as Jack has indicated, you get to a small area, the condition is entirely reversed, or may very well be. Where you have a tremendous growth such as occurred in Anaheim, California between 1950 and 1960, almost all of it was due to migration. But, the bigger the area the more these things level off and I would say in dealing with a state or a nation the hardest thing to try to predict is the births.

Now, we can look at the gross population projections for Indiana over the next few years. Here again we are talking about the state in general, and, I should add, because changes may not create a problem in the state does not mean that they will not in a local area. Right now (and for at least the next six or seven years) the number of pre-school children in the state is on the decline. This fact, of course, is co-related with the fact that our births have been going down since 1957. Something that may be more meaningful in terms of manpower and economic status of the state is the fact that right now the number of school children or children of elementary school age is in the process of leveling off. After this group peaks, either in 1967 or 1968 at about 850,000, we can expect a modest decline for a number of years. So, in the matter of building new elementary school facilities the state as a whole will not have a major problem. (I am not talking about replacement facilities, but new facilities for elementary school children.) Of course, this does not mean that rapidly growing places such as Brownsburg will not continue to have these problems.

The high school age group (which we are considering to be 14-17 year olds) is presently leveled off at just about 350,000, but it will take another upturn and will probably increase for about the next ten years. It will peak about 1975 and then it, too, will start downward, at least temporarily. These things we can be pretty sure of, barring some major financial or world catastrophe, because they are based on births that have already occurred, and do not involve any projections of births or birth rates.

The college age population (ages 18-21), which is of course a major concern in our present economy, will level off just about 1970. But after a plateau of three or four years, it too will shoot upward, and peak again in 1980. Without taking into consideration the probable increase in the per cent of people attending college, there will be a demand for a great number of new facilities if we provide the same college and university education we are now providing.

The young adult group (ages 18-24) overlaps the college age population. This group will increase from about 500,000 to 600,000 between 1965 and 1970, and by 1980 will come close to peaking at about 800,000. To put it another way, between 1960 and 1980 this group -- which is now entering the labor force, beginning family formation, and creating new demands for all types of goods and services -- will almost double.

As would seem obvious, the cohort born in the 1930's, which is roughly the 25-35 age group, will continue to represent a rather low proportion of the population. (A cohort is a group of people followed through a period in time.) Also, though I may get disagreement on this point, I see no evidence that there will be an increase in the proportion of persons over 65 in the next 10 to 20 years. I do not mean that there will not be more people; there will be, but the percentage of the total population over 65 will probably remain between nine and ten per cent. This fact, in turn, does not necessarily mean that there will be no need for new facilities, but insofar as there is no increase in present programs, there should be no heavier demand on the productive population than there is now. The assumption that there will be no expansion of programs for this group is probably not sound.

It also seems evident that the dependency ratio (the ratio of those under 18 and over 65 to the 18-64 age group) is just about at a maximum now. This figure was about 65 (i.e., 65:100) in 1950 and 85 in 1960. In the series of projections made three years ago, we estimated it to be about 87 in 1965. The 1980 projection was around 85, and present indications are that it is likely to be a high estimate. It is reasonable to assume, therefore, that this ratio will decline in the next few years. In practical terms, there will be fewer people for whom the productive group must provide, so that, other things being equal, the general standard of living should improve.

Another thing we feel pretty certain about is that the major gains in population will continue to be in the suburban areas. The cities and the rural areas will not gain to as great an extent. This fact suggests two comments. First, it should be noted that the areas around Indianapolis, prior to 1940, were essentially rural. Sometime between 1940 and 1950 they changed from rural to suburban. Although Johnson and Hendricks counties were the fastest growing in the state between 1950 and 1960 (in percentage), neither one experienced any major growth between 1900 and 1940. I think the increases in suburban population will accelerate as, for example, we provide more and better roads and highways. Second, we need to think about the pattern of city growth. It may appear on the surface that cities have grown more or less rapidly, at least in Indiana. (For the country as a whole, 15 or 16 of the top 20 cities in 1950 lost population in the next decade.) For example, Indianapolis gained about 50,000 population between 1950 and 1960, which appears to be substantial gain. If, however, you take the area that comprised the city in 1950, there was a gain of less than 2,000. This was a period when births exceeded deaths in Indianapolis by something like 75,000. Thus cities are not gaining as rapidly, and I do not think they will gain as rapidly as it may appear on the surface.

I do not want to go into any great detail about why we need population projections. I think the need is self-evident. Although we cannot set a monetary value on projections, I am firmly convinced that they are worth far more than their cost to such groups as school administrators, community planners, retail and industrial developers, professional persons, hospitals and medical groups. The state of Indiana, at least until recently, has not been providing the needed projections. Now, your next question is, I think, can we and should we provide the needed projections? I do not believe, we can give an unqualified answer to that question. I think the answer is, "yes and no." I think we can answer "should we" in the affirmative, but whether we are able to is another matter. Any attempted projection, as we have indicated, is likely to be very tenuous and I think we would be barking up the wrong tree if we went into this thing saying: "Well, we can tell you exactly how many students will want to enroll at Purdue University in 1985." We just can not do anything like that. However, by using data that are available and that can be made available, we can certainly make meaningful projections and, as I have said before, I think these are definitely worth the effort and the money.

Possibly I have fooled Dwight Kelley and Bill Andrews up to this point, because I told both of them earlier that I was going to propagandize a little bit. Maybe they thought I had forgotten about it, but I have not. So I would like to mention what I would suggest as possible steps to better and more meaningful projections in the State of Indiana. I will go through these steps (which are not unrelated) and then elaborate considerably on the first one, the development of a state demographic unit. This is something we in the State of Indiana can do. I am not saying that we will do it or want to do it, but we can do it.

The second is something that I do not think is going to be a major problem. Mr. Olsen may say something about this, or at least he may be willing to answer some questions on the subject. This involves establishment of a quinquennial census. Of course, here in the state, all we can do is put in our two cents worth, but if you will think about it, having a census every five years much more than doubles the value of information. It is far easier to make estimates with a population base no more than five years old, than with one eight or nine years old. I believe we have good reason for optimism concerning a quinquennial census. The Bureau of the Budget did not approve a 1965 census for reasons I will not go into, though I do not think they were very good. But, I think that by 1975 it is almost a cinch that we will have a census and we will have this every five years thereafter. I am not a constitutional lawyer so I did not know what has to be done to provide for such an arrangement, but I did have a chance to talk to Mr. Brunsman of the Census Bureau some weeks back and he indicated that this would not require a constitutional amendment, provided that the quinquennial census was not used to establish congressional districts.

A third thing we need is more objective and realistic orientation of estimates and projections. I have a feeling that, for some reason, everybody, every community, and every area wants to grow in population. I am not sure that this is necessarily desirable, but at any rate it is my opinion (and not a snap judgment) that because of this desire, many estimates and projections are definitely weighted in this direction. Thus the factors which point toward lack of growth are played down, and the factors which tend to give a high level of growth are stressed. This bias, I think, is unfortunate.

The fourth step might work in well with the first. At the time of the last census the Indiana Census and Vital Statistics Committee was organized to try to relate census and vital statistics data and to recommend and possibly implement publication of data in these areas. This committee has not been active recently, but it presumably will be activated in the next two or three years. Some committee such as this should be staffed to serve in advisory capacities to a state demographic unit or other unit that might be developed.

Now, very briefly, I want to go through some of the things I think ought to be included in a state demographic unit, together with some of its functions. It should include analysis of census data in relation to vital statistics information. From this could be provided information on migration trends by city and county, or major areas, such as Jack's 13 areas in the state; Indiana life tables; prediction concerning birth and mortality trends; and detailed population projections and estimates. A second major function would be development of community and county profiles using census and vital statistics data, as well as other various source materials. County, city, and state profiles could be developed to include, among other things, population by age, race, and sex; social and economic characteristics, including information on occupation, educational levels, and housing additions; mobility of the population; health education and related sources; key community persons and organizations; and detailed vital statistics information; special studies, such as development of pertinent data needed by government and private planning agencies; vital rates for specific groups such as ethnic or occupational groups. And I might say here that generally speaking we do not have any sound vital rates for occupational groups, because although occupation does appear in the census and also on the death certificate, there is really not much correlation between the two. This is unfortunate, but can not be avoided under the present situation.

You could talk all day on any of these points, but the key question is why do I feel we need a demographic unit? You might argue that if demographic data are needed in connection with a particular plan, it can be obtained through contract with a university or private agency, such as has been done in the study Jack's been describing, or in the Department of Commerce study. However, I think that this line of reasoning is not sound for a number of reasons. First of all, the base data that are needed will not, in all probability, be available from any single source. With the establishment of a demographic unit, efforts would be made to funnel pertinent data to this one location, or this one unit.

Second, in most cases the contractor has to collect and develop background data before he can make the necessary analyses. With a demographic unit much of the background work would not be necessary, because it would already be available. I can give an analogy on a much smaller scale. In 1950 in Marion County there was a great deal of duplication of efforts regarding census data. By 1960 there was a committee which, among other responsibilities, served to coordinate these data. Through its efforts I would venture to say that three times as much data were made available in 1960 to interested people as in 1950 and probably with less overall effort, too. With an established unit one would expect more continuity of effort and a higher degree of staff experience in demography than would be the case when the work was contracted for with a private agency or organization.

There is another question we need to ask, and that is, where should such a unit be located? I would like to list four possibilities, and just one justification for each location. First, a new state agency might be established. The primary advantage of this approach would be a reduction of conflict of functions that might arise in an already established agency. Second, the State Board of Health, where vital statistics data are already readily available. Third, the State Department of Commerce. A main reason for location is that much of the market for the data would come through this department. Fourth, a state university, where there is a research atmosphere and probable availability of skilled personnel. The respective advantages could all be elaborated on and I am sure all of you could think of many disadvantages for each. As to the cost, it would be next to impossible at this stage even to try to make a reasonable estimate. However, I do think, as I indicated earlier, that whatever the cost the money would be well spent.

PREVIEW OF THE 1970 CENSUS OF POPULATION AND HOUSING

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Although 1970 is still several years away, Census Bureau plans for the 1970 Census of Population and Housing are already taking shape. Although these plans are far from complete, the Bureau is planning to make the upcoming census more useful to persons who need information about population and housing for smaller areas than has been the case in any previous census.

We believe this will be welcome news to statistics users with many different interests including governments, welfare agencies, business analysts and educators.

Let me review briefly for you what we have been doing so that you will understand why we of the Census Bureau are confident we can provide more information in 1970.

First -- how the Census will be conducted.

Probably all of you are aware of the Census Bureau's plans to make extensive use of the mail-out/mail-back technique in 1970, particularly in urban areas where address lists are already established or can readily be set up and verified. The mail procedure has been tested over the past 15 years in a variety of ways and places and from our experience with it to the present time, it promises substantial savings in time, better quality of data and some savings in money.

Households on city type mail delivery routes are expected to number about 45 to 50 million by 1970. With each household enumerating itself by filling in circles to create black dots in appropriate places on the questionnaire, the time-consuming and costly steps required in previous censuses to transfer the data by hand to machine-readable form, will be eliminated. Where necessary, enumerators will be used to follow-up incomplete returns and non-response cases by telephone or personal visit. In some rural areas, enumerators will still be used as in 1960 and previous censuses because of the cost and difficulty of setting up address lists in such areas. However, only 125,000 enumerators will be needed using the mail technique as against an estimated 200,000 that would have been required using 1960 methods.

Second -- what topics will be included in 1970?

The unmistakable need for improved and expanded census tabulations was expressed to us in a series of 22 regional meetings held during the first half of 1966 throughout the United States. These meetings brought Census Bureau officials face to face with more than 2,000 primary users of census statistics so that our people could learn at first hand what local needs are. Specifically, their purpose was to ask these users what new data will be needed in the 1970's, what questions should be changed or even eliminated, what geographic areas are most important and how the results of the census should be presented to permit their most effective use.

The typical meeting started off with Census Bureau people presenting some viewpoints developed within the Bureau itself or suggestions from advisory committees or from participants at earlier meetings.

To give you a feeling of the discussions at the regional meetings, I will mention a few of the proposed changes in census questionnaire items for housing and population, and later a few excerpts relating to the expressed needs for the statistics.

Journey to Work -- One item for which there is a particularly great demand around the country is detailed information on place of work. In 1960, we collected commuting information limited to the city or county of place of work. Now, however, the needs of transportation planners and others interested in travel and commuting patterns are such that the demand is for data down to the census tract or for small traffic zones. When we tell these people that such data could cost perhaps five million dollars to produce, they respond that many times this amount is now being spent to obtain such information which necessarily cannot match the potential usefulness of Decennial Census statistics.

Race -- No significant objections have been raised about asking a question on race or color. Evidently earlier criticisms have been quieted by the assurance that the census document is confidential and cannot be used to the detriment of an individual and by the realization that statistics on race and color are useful and can be beneficial to minority and disadvantaged groups. Color is one personal characteristic for which data for the entire population have been obtained in every census from the first in 1790.

Education -- The 1960 Census included two sets of items in this field: (1) whether enrolled in school and if "yes" whether public or private; and (2) highest grade or year of school attended and whether the person completed this year. Reflecting the widening public interest in educational activities, time and again suggestions were made that Census seek additional data on vocational, technical and adult education because of the strong uptrend in these forms of education and their possible crucial influence on tomorrow's jobs and income. Also, users have suggested that information be obtained on college degrees obtained and field of specialization in college.

Health -- With increased interest in health there is a demand for information on the extent and nature of physical handicaps. Also for information of use of medical and health facilities.

Housing Conditions -- A major change in the housing census will be in the method to be used for measuring housing quality. When the enumerator visited the household in the 1960 Census, he looked at the house or apartment and classified it in one of three ways; as sound, deteriorating, or dilapidated. Since this evaluation involved personal judgment, which was not consistently applied, many units were inaccurately classified, resulting in some dissatisfaction with the accuracy of the 1960 data. Furthermore, recent tests using 1960 classifications to see if individual householders would report more objectively on housing conditions indicated even less satisfactory results than 1960. So for 1970 the Bureau is developing an objective rating based on a combination of items such as age of structure, value, rent, heating and plumbing equipment, kitchen facilities, and the like.

Another change from 1960 likely to be made is in questions on the types of household equipment and appliances. As in 1960, there is no longer any value in asking about electricity, kitchen sink or refrigeration -- such items at one time provided significant indicators of the level of living, but are now almost universally available. Preference in 1970 will be given to questions on equipment which involve matters of public concern, such as water or power supply, need for sewerage systems, distribution of automobiles or the spread of communications media. Information on household appliances is also of considerable interest to industrial and marketing groups. Appliance data are likely to be gathered in a two and one half per cent sample survey supplementing the main census.

Here are a few illustrations of the variety of data needs expressed at the regional meetings:

A city planning commission researcher - wants more frequent Censuses of Population and Housing, preferably at five year intervals, perhaps less detailed at a mid-decade enumeration; needs greater detail on journey to work; place of residence and place of work should be identified to the block level to measure streams of movement and also to permit tabulation of nonresident work force; some method must be developed to coordinate the census program with the public roads and urban renewal programs.

An educator - wants more education data for persons 15 to 25 years; more on characteristics of college students 18 to 25 related both to place attending college and parental homes; more information on cultural level of people, perhaps ask number of books read; ask religious preference for use in education statistics; continue data on race.

A chamber of commerce representative - says we should report mean income by census tract and total household income; do not change definitions, retain comparability; needs additional data for areas bordering SMSA's.

A highway department director - needs new traffic data to meet requirements of Federal Highway Act for continuing plan of research; combine census and travel data or update traffic surveys right after Census; need census tract type data for smaller areas, particularly income and place of work, also number of automobiles per tract.

A private economic researcher - wants much more cross tabulations of housing characteristics with population characteristics, particularly relationship of family income to housing characteristics; suggests we conduct a mid-decade census but restrict it to changing areas.

A sociologist - says we should tabulate characteristics of persons living in group quarters by census tracts; need new concept of crowding, perhaps persons per 100 rooms; suggests use of multiple correlation to develop objective rather than subjective measure of housing conditions.

The Census Bureau during 1966 tested contents of two different questionnaires -- using two different ways of laying out the questionnaire and two different ways of asking some of the questions. A preliminary list of questions is to be tested in a special census of New Haven, Connecticut in April 1967. On the basis of results in New Haven, there may be some rephrasing of questions or even some changes in subjects before the test census to be conducted in the spring of 1968. The questions used in the test census will be identical for the most part to those used in 1970.

Statistics in detail about local areas are the unique contribution of a decennial census. To meet the needs, a major requirement is standardized reporting units within metropolitan areas that will provide a constant basis for the presentation of statistics and thus maintain reasonable comparability status from one census to another.

The Census Bureau -- as well as business, government and research organizations -- has long felt a need for standardization and comparability. As early as 1910, the Bureau began using its own uniform type of statistical building block -- the census tract -- which has since served with considerable benefit to many users of statistics.

A census tract is a small, permanently established geographic area into which cities and their environs have been divided for statistical purposes. The average tract has about 4,000 persons and is laid out initially to achieve some uniformity of population characteristics, economic status and living conditions. The decision to establish tracts generally depends on the initiative of a local area group which also defines the boundaries, subject to approval of the Census Bureau.

The census tract program will be extended in the 1970 Census. Approximately 23,000 tracts in 177 standard metropolitan statistical areas were recognized in the publications of the 1960 Census; about 33,000 tracts in 230 SMSA's will be recognized in 1970 publications. All cities of 50,000 and over and their suburban areas will be tracted. Since some smaller cities have expressed an interest in tract statistics, the Bureau has announced that, if the cities will establish the tracts, the Bureau will tabulate statistics for them and make them available at cost for local use or publication. At present, the Bureau cannot promise to publish the tabulations for these smaller places in the regular census reports.

In order further to meet the needs that have been expressed to us, it would be necessary to expand the block statistics program. This expansion would involve about 1,600,000 city blocks, more than twice the 750,000 block reports provided in 1960. Moreover, the amount of information supplied for each block would have to be expanded to include not only the housing information which has traditionally been the focus of the census block reports, but also information about the population which was not provided by blocks in 1960.

What we have talked about thus far -- census tract and block statistics -- are the general purpose statistics of the decennial censuses. In all likelihood, they will always appear in the printed bulletins and volumes with which you are most familiar.

There are many users who need statistics for small areas which do not conform to census tracts. They are concerned with areas such as school districts, voting precincts, health areas, traffic zones, etc.

The new methods of identifying addresses, coupled with greater use of electronic computers, will provide a degree of flexibility to meet such needs which has not been possible in the past.

As a direct product of the advancing computer technology, the Bureau has in operation two major programs which will produce important new benefits for users of local and small area data. The two programs will establish a fine-grained computerized control system for relating census and locally-generated data. This will provide a statistical service not available in any previous census.

The first major program involves preparation of a master address coding file on computer tape to be used in assigning the 45 to 50 million residential addresses to states, counties, cities, congressional districts, tracts, wards, blocks and block faces.

The second major program involves the uniform mapping of the urban cores of all SMSA's in the nation. The standardized mapping is required to make possible the orderly coding of those 45 to 50 million addresses -- in other words, to pinpoint each address in the proper location.

The Census Bureau has never been a map-originating agency. In previous censuses, it used whatever urban maps were avilable to piece together the needed enumeration districts. In 1960, for example, the Bureau encountered 137 different maps in one metropolitan area; all were quite proper for whatever purpose they were made but impractical for census purposes.

A uniform mapping system has long been needed and it is now essential if we are to have an automated or computerized address coding system.

What the Bureau did to overcome this problem was take U.S. Geological Survey maps, and change the scale from 1":2000' to 1":800'. Then, by eliminating topographic detail and adding new streets, a standardized unit map was prepared.

Because of the massive nature and complexity of both the mapping and address coding programs, the Bureau has been seeking and receiving valuable assistance of local groups, primarily the planning commissions and census tract committees in the urban areas. Local area officials know their own areas far better than we at the Bureau ever can; thus, they have been of great help in correcting and updating maps and address information.

Financial assistance to accelerate both programs at the local level became available recently from the Department of Housing and Urban Development under its "701" planning program which is applicable in many metropolitan areas.

As further inducement to local groups, the Bureau, in turn, will make available to each cooperating area copies of the appropriate census maps and the address coding guides in their final computer tape form. In addition, we will reserve an optional field in the fine-grained computerized system for local use.

Let us do a short exercise in geographic coding. Most of it you can do in your mind because we will start with your own home address . . . your street and house number. First, I will code it by the state where you live, then by county, then by city or town, then by congressional district and by postal zipcode. You probably live within a Standard Metropolitan Statistical Area, so that data will be recorded. Probably you also live in a census tract -- which, as we mentioned before, is something like a neighborhood or community of perhaps 4,000 or so people. If you live in a large city, you live in a city block to which the census will assign a number within the tract. The number of the tract and the number of the block also become part of the geographic coding system, as we get to smaller and smaller areas.

In 1970, the Census Bureau will narrow the geographic coding to an even smaller area -- the block face, or the side of the block. Your address will be coded by the face of the block where you live.

Then there can be other geographic areas built into the coding system -- using the "optional field" mentioned before. Each of the basic block faces may be coded so the computer can identify it in relation to the locally designated areas which might be school zones, hospital service districts, traffic zones, and the like. This method would permit locally-generated data for such administrative districts to be matched with census statistics since both will be coded to the same small areas.

Let us look at a few examples: Local data on juvenile delinquency within a certain police precinct can be matched with census summary data on population, age, race, sex, income, and housing characteristics for the blocks and blockfaces making up the precinct. A welfare worker may need to know the number of persons 65 and over living within 20 blocks of a proposed recreation center for the elderly. Or local recreation officials might need to know how many children five to twelve years of age live within a ten block radius of a proposed playground. Answers to problems like these and others of even greater complexity can be obtained with the new geographic coding system and present computer know-how.

This, then, is what the Census Bureau expects to take place in the 1970 Census: tabulation by areas which can be tailored to meet local needs, and the maps and the computer technology to make the statistical information more useful and more readily available to local communities.

Local people need to plan for:

(1) Any special areas for which they want standard tabulations of census materials;

(2) Any special tabulations of census materials which they want for standard or for nonstandard areas;

(3) Any special tabulations of their own data they need to make to have their tabulations in a form comparable to census tabulations;

(4) Any tabulations they want to make, using census tract or block tables.

In connection with the New Haven, Connecticut pretest next April, there will be an opportunity to explore some of the ways in which census tabulations can best fit local needs. We hope to develop techniques in New Haven that will be helpful to many other metropolitan communities. This project will explore such problems as (a) the level of detail and the form in which census data should be made available to local users; (b) the ability of local organizations to relate census tabulations with locally-generated tabulations for special programs; (c) development of programs for local communities to permit rapid conversion of census data into locally usable and easily understandable graphic summary forms such as graphs and charts.

The study in New Haven is being undertaken on a cooperative basis involving the Census Bureau, city and state officials, and federal and local agencies concerned with regional and local programs. Results of the project will be publicized so that other cities and regions may benefit from the efforts in Connecticut.

The results of the work in New Haven will also be of great interest to us at the Census Bureau. What we expect to learn there, added to what we have learned in other post-1960 special censuses, plus the efforts we have put into evolving new procedures for the new times we live in, should give us even a sounder basis for our present confidence that more help for users of statistics will come from the 1970 Census.

SOME FINDINGS OF THE MICHIGAN MANPOWER STUDY

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The Michigan Manpower Study represents an analysis of the characteristics of the labor force of Michigan as projected to 1980. The study has been conducted by the Manpower and Regional Economics Division of Battelle Memorial Institute under the general direction of the Michigan Employment Security Commission (Michigan Department of Labor) with co-sponsorship and technical assistance from the State Resource Planning Division of the Office of Economic Expansion (Michigan Department of Commerce) and the Division of Vocational Education (Michigan Department of Education).

This study has three major objectives:

1. To develop an improved methodology for analysis of projected characteristics of the labor force (including educational attainment, industry of employment, and occupation of employment).
2. To provide estimates of the characteristics of Michigan's labor force in 1970, 1975, and 1980.
3. To serve as manpower guidelines for educational planning in the state of Michigan.

The report on this study provides a detailed analysis of the factors affecting the future level of employment for each of 45 specific occupations for the entire state and for the Detroit Standard Metropolitan Statistical Area (Wayne, Oakland and Macomb counties). As an important complement to the occupational analysis, detailed projections of employment in 32 industry classifications are furnished. All of the projections have been developed through careful analysis of the supply of labor with respect to such characteristics as educational attainment and labor-force participation.

Purpose of Study -- Rapid growth of professional and other white-collar occupations during the postwar period has stimulated a general recognition that the labor force in the 1970's will require an increasing utilization of conceptual skills rather than manual skills. *This growing importance of brain-power-related job functions is expected to create a stronger linkage between formal education and job preparation.*

The Michigan Manpower Study is designed to provide a framework for understanding the impact of technological changes on the types of skills which will be demanded by the technology of the 1970's. Recent changes in the national economy indicate that the socio-economic structure is evolving into what might be called the "Human Resources Era". Broadly speaking, the evolution of the U.S. economy can be described in terms of three basic eras:

1. *The Agricultural Era* - which ended in the late 1800's.
2. *The Manufacturing Era* - which prevailed through the late 1950's.
3. *The Human Resources Era* - which emerged during the early 1960's.

During the Agricultural Era, the cultivation of the soil, the harvesting of crops, and the raising of livestock provided the major source of family income. Sweeping changes in agricultural technology, ranging from basic changes such as the invention of the cotton gin and the steel plow to complex developments such as the gasoline-powered farm tractor and harvesting and reaping machinery, brought steady and substantial increases in farm productivity. The resulting improvements in the efficiency of farm operations have made an increasing portion of the labor force available for other sectors of economic activity.

The Industrial Revolution, which began in England in the late 18th

Century, entered its period of most rapid growth and greatest impact on American society about a century later. The development of the second era of economic growth in the U.S. -- the Manufacturing Era -- was made possible by the higher productivity achieved in agriculture, which not only freed the necessary labor force but also permitted a higher standard of living and increasing consumption of the products of manufacturing establishments. Hence, if any one element dominated social and economic development in the United States during the first half of the 20th century, it was the rapid expansion and proliferation of manufacturing and manufacturing-related activities.

Currently, technology is having an impact on manufacturing similar to its earlier impact upon agriculture. Improvements in mechanization, automatic control, and other aspects of productive efficiency are resulting in productivity increases which make possible continuing reductions in the proportion of the labor force which is required to maintain the product output of manufacturing. As a result of its analysis of the future development of the U.S. Economy, *Battelle's Socio Economic Research Section has characterized the 1970's as a new and third era* -- *the Human Resources Era* -- *since the U.S. economy will find its essential vitality in those activities which are related to the unique resource of man* -- *namely, his brain, which is the source of the creative, adaptive potentials required by our increasing technological sophistication. Contrasted with the Agricultural and Manufacturing Eras, when most workers were concerned primarily with transforming natural resources into useful products for their fellow man, activities which generally involved physical dexterity or strength, a rapidly increasing percentage of workers in the Human Resources Era* *will need a high level of educational achievement and mental development to meet job requirements*.

The rapidly changing dimensions of the manpower requirements of industry and the growing linkage between manpower development and the educational system made it imperative that the state agencies of Michigan which participated in this study initiate an intensive analysis of the state's future manpower requirements. Under the leadership of the Michigan Employment Security Commission, The Michigan Manpower Study was designed to analyze the specific occupations which will be required by each of the major industrial sectors in the economics of Michigan and Detroit.

Battelle Memorial Institute was engaged to develop the basic model and to provide the critical judgments concerning the influence of anticipated technological change upon the skill requirements of individual industries. Michigan thus became the first state to make a comprehensive inquiry into the complex occupation-by-industry structure of its current and future employment. It must, of course, be remembered that since this is a pioneering and, in many ways, unique study, the findings reported are not expected to provide a "final word" on the employment structure of 1980, since it is anticipated that the actual projections will be refined as further information (e.g., the 1970 Census) becomes available. Nevertheless, this study is expected to provide valuable guidelines for the planning of programs involving manpower development which can be made available to Michigan's educational institutions, business and labor organizations, and public and private research organizations. Of equal importance, it will provide the school system throughout the state with an important tool for the appraisal of current curricula in the perspective of future manpower requirements.

The emphasis in this study on the development of a model and related methodology grew out of recognition that the data available to the manpower planner are relatively limited. The emergence of the Human Resources Era, creating a growing demand for sophisticated understanding of future manpower requirements, implies, by its very nature, that significant progress must be made in the area of available knowledge of the "Human factor" in our economic life. It is anticipated that the innovations in techniques and methods associated with this study will encourage the development of additional data sources and the pursuit of similar studies in other states.

Major Findings -- Projections of the economic outlook for Michigan industries indicate that total employment will increase 1.9 per cent per year between 1960 and 1980, with employment reaching nearly 4 million persons in 1980. Associated with this growth in total employment will be an expansion in population from 7,800,000 persons in 1960 to 10,200,000 in 1980.

Employment growth in Wayne, Oakland, and Macomb, the counties that compose the Detroit S.M.S.A., is expected to be 1.8 per cent annually, increasing total employment to 1,900,000 in 1980, compared with 1,300,000 in 1960. It is especially significant that the growth in employment in Detroit of 1.8 per cent per annum is considerably above the annual rate of 1.1 per cent experienced between 1950 and 1960.

The detailed employment projections reveal that total employment in manufacturing activities will remain stable between 1975 and 1980, having increased in the late 1960's and early 1970's. Throughout the study period, the proportion of total employment in Michigan will be associated with manufacturing industries is expected to decline from approximately 38 per cent in 1960 to approximately 29 per cent in 1980 (see Figure 1). Furthermore, the most rapidly growing industries will be in the service-producing sectors of the economy rather than in the goods-producing sector.

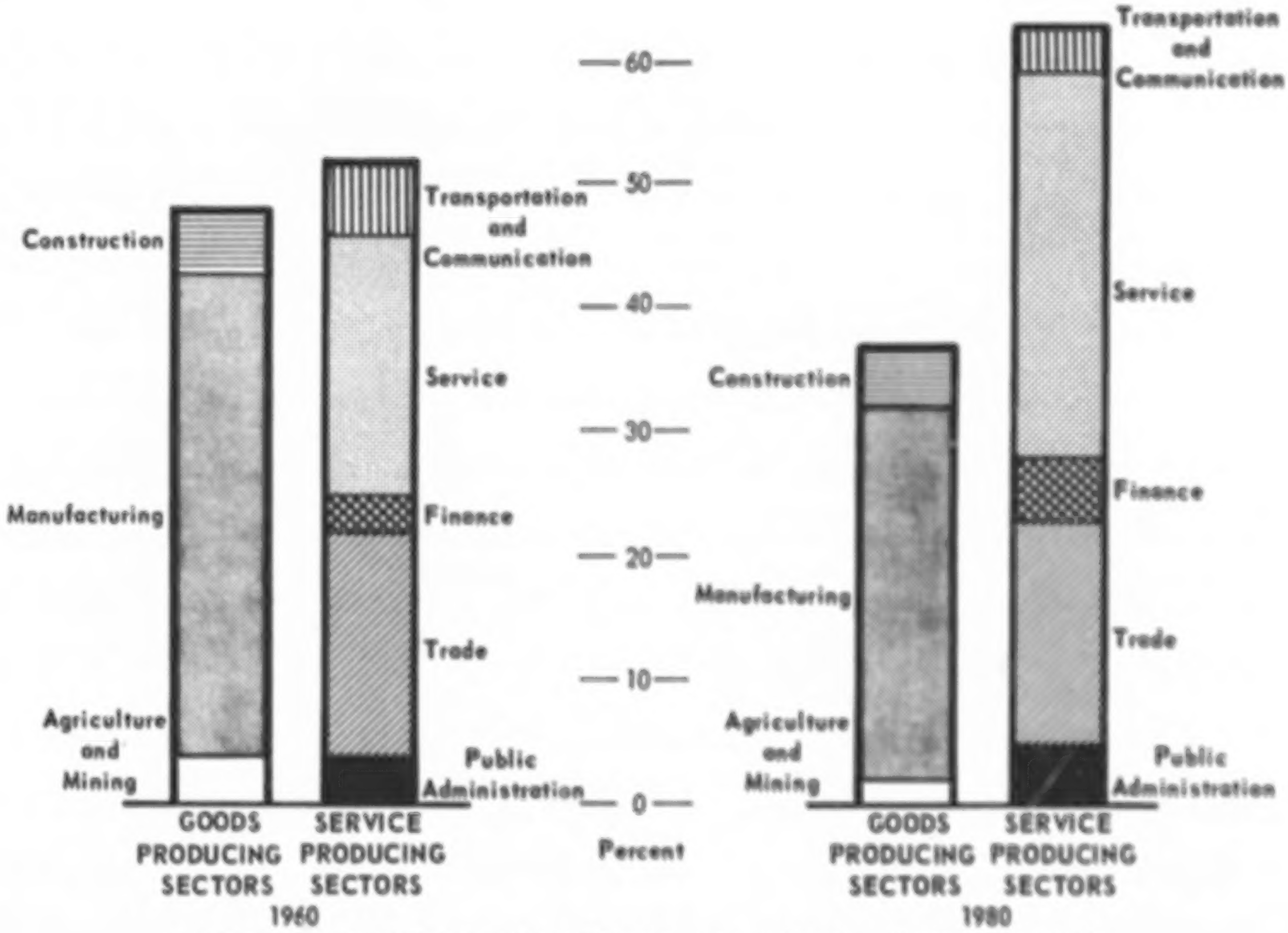


FIGURE 1. MICHIGAN EMPLOYMENT BY SECTOR, 1960 AND 1980

Source: Table 16.

In addition to changes in the structure of employment by industry, significant changes are anticipated in the mix of skills required in the labor force. This report describes the factors affecting total employment in Michigan and Detroit for each of the following detailed occupations:

1. Draftsmen
2. Aeronautical Engineers
3. Civil Engineers
4. Electrical Engineers
5. Industrial Engineers
6. Mechanical Engineers
7. Professional Nurses
8. Personnel and Labor Relations Workers
9. Physicians and Surgeons
10. Professors and Instructors
11. Teachers
12. Medical and Dental Technicians
13. Electronic Technicians
14. Purchasing Agents and Buyers
15. Salaried Managers
16. Self-Employed Managers
17. Bookkeepers
18. Cashiers
19. Secretaries
20. Stenographers
21. Stock Clerks and Store Keepers
22. Salesman and Sales Clerks
23. Typists
24. Insurance Agents, Brokers, and Underwriters
25. Carpenters
26. Electricians
27. Foremen
28. Machinists
29. Mechanics and Repairmen
30. Plumbers and Pipe Fitters
31. Toolmakers and Diemakers
32. Assemblers
33. Checkers, Examiners, and Inspectors, Manufacturing
34. Delivery and Routemen
35. Filers, Grinders, and Polishers, Metal
36. Operatives, Fabricated Metals
37. Truck and Tractor Drivers
38. Numerically-Controlled-Machine-Tool Operators
39. Engine Lathe Operators
40. Attendant, Hospital and Other
41. Cooks, Except Private Household
42. Hairdressers and Cosmetologists
43. Janitors and Sextons
44. Protective Service Workers
45. Waiters and Waitresses

Significantly, the emergence of the Human Resources Era in Michigan, traditionally a manufacturing oriented economy, will lead to an expected growth rate in professional employment approximately double the rate for total employment. Of the 45 occupations selected for study, the following will experience exceptional employment growth:

Civil Engineers (4.0 per cent per year between 1960 and 1980),

Electrical Engineers (4.9 per cent),

Medical and Dental Technicians (6.0 per cent),

Electrical and Electronic Technicians (6.5 per cent),

Other Engineering and Physical Sciences Technicians (5.6 per cent).

Employment in clerical occupations is expected to grow about 50 per cent faster than will total employment. Exceptional growth in employment is anticipated for secretaries (3.8 per cent per annum) and typists (3.4 per cent per annum). A ranking of the occupations by projected growth rate of employment is presented in Figure 2.

The interaction of expected change in the structure of industry and the mix of skills required by industries will produce uneven growth patterns throughout the 1970's. For example, the number of carpenters employed in Michigan is expected to increase from 25,700 in 1960 to 28,800 in 1970, and then decline to 26,400 in 1980. The number of assemblers is expected to decline modestly between 1960 and 1970 and then exhibit much greater reduction between 1970 and 1980.

Throughout the forecast period, many major craft and operative occupational categories will continue to account for significant shares of total employment. In 1980, over 1.1 million workers will be employed in these two major categories. A large number of employment opportunities will be associated with job openings created by retirement of older workers. Programs in vocational education will be especially critical for providing the high-level skills required in these job functions. (Projected employment for each of the occupations studied is presented in Table 24 for the State of Michigan and in Table 25 for Detroit.)

In aggregate, the transition to the Human Resources Era economy will lead to a relatively rapid growth for white-collar occupations. The shift to white-collar occupations is illustrated in Figure 3.

The U.S. Economic Outlook in the 1970's -- Projections developed by the Socio Economics Research Section of Battelle Memorial Institute estimate the gross national product in 1975 at 950 billion dollars (in 1960 dollars); representing a growth of 4.4 per cent per annum from the 1960 level. The essential characteristic of these national projections

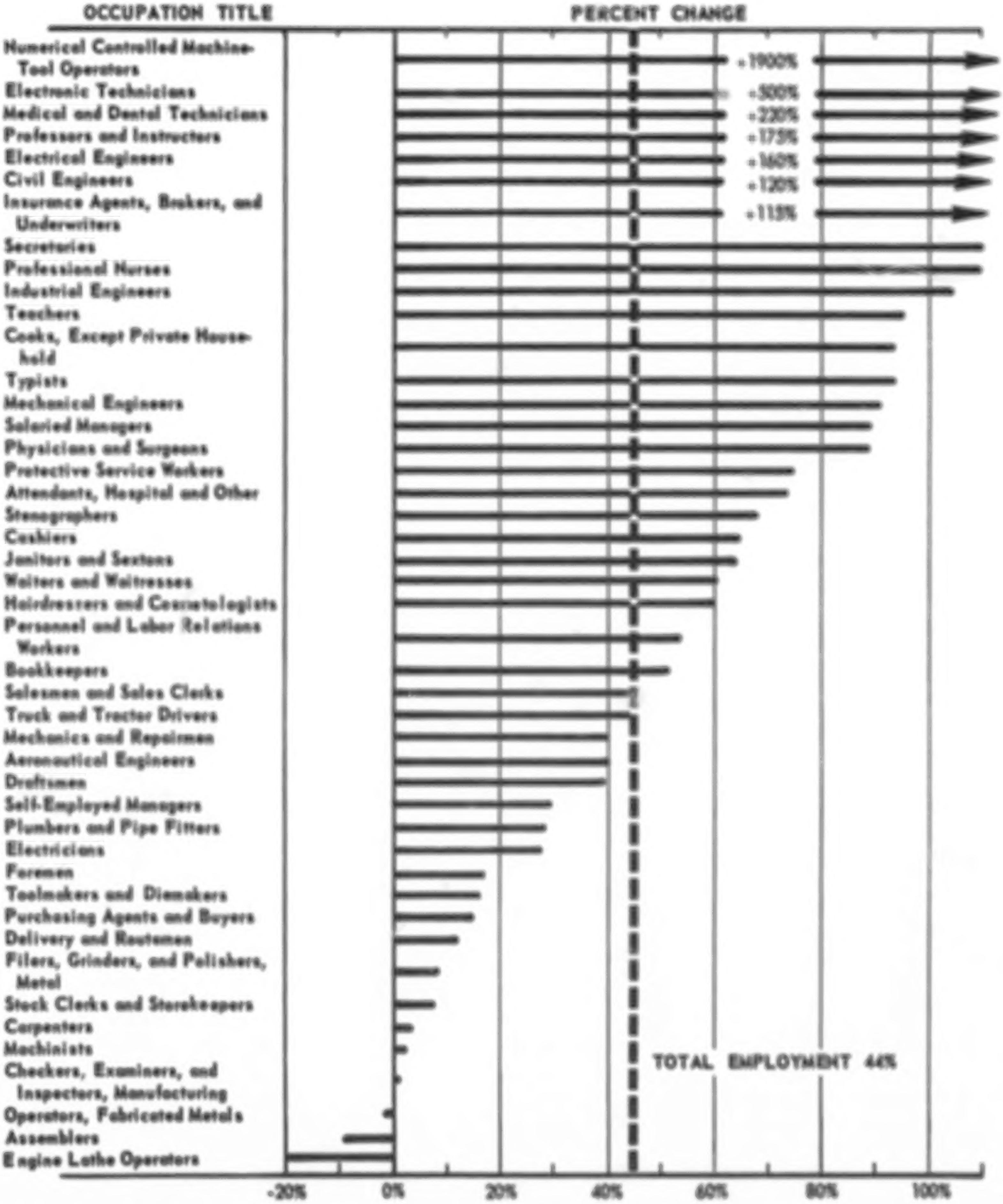


FIGURE 2. GROWTH FOR SELECTED OCCUPATIONS IN MICHIGAN, 1960 – 1980

is that they were developed by an analysis of the individual sectors of the national economy in terms of the relative share of total national output historically contributed by each of these sectors. National output levels were determined on the basis of estimates of productivity and an analysis of consumer expenditures by individual socio-economic classes. (A socio-economic class is made up of households sharing common characteristics in terms of the level of income received by the household and the educational attainment and occupation of the household head.) Consumer expenditures were analyzed in order to determine the aggregate demands to be placed upon individual industrial sectors. Hence, employment levels in industry sectors are functions of aggregate demand plus projected productivity change.

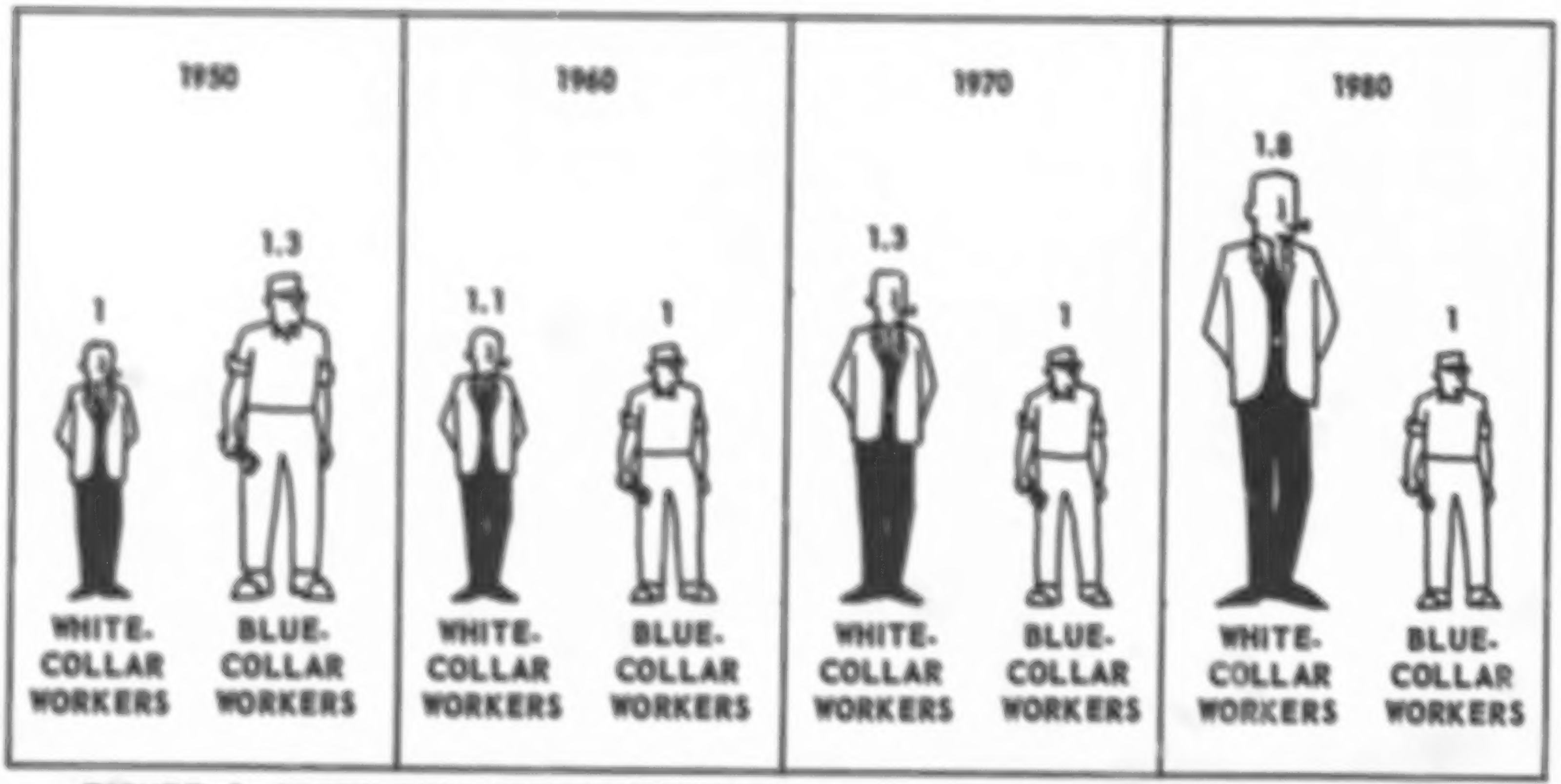


FIGURE 3. WHITE-COLLAR WORKERS WILL GROW IN SIGNIFICANCE IN MICHIGAN

Sources: 1960 Census of Population, Vol. 1, Characteristics of the Population,
Part 24, Michigan, Table 120,
Battelle estimates.

In the United States, overall employment is expected to increase 31 per cent between 1960 and 1975. Of particular significance will be the relatively slow increase in manufacturing employment and the rapid growth of professional services, which will increase from 11.7 per cent of total employment in 1960 to 20.7 per cent in 1975. While manufacturing employment will grow numerically, from 17.5 million persons in 1960 to 19.5 million persons in 1975, the rate of growth of manufacturing employment will be only about one-third of the rate for total employment.

The population of the U.S. is projected to grow from 181 million in 1960 to 242 million in 1980, but this growth will not occur equally in all age sectors. Significantly, the number of persons in the group aged 20-24 will increase by over 80 per cent, from 5.6 million in 1960 to 10.2 million in 1980. In contrast, the middle-aged workers, 40-44, will actually decline in absolute numbers. As the structure of the labor force changes in harmony with these basic shifts in the distribution of the population, young persons, and especially young adults, will represent an increasing percentage of the total labor force. The young adults of 1980 are in our primary schools today. They must learn the appropriate skills for the types of occupations expected to dominate the labor force of the 70's. The Human Resources Era will effect significant changes in industry structure, occupation content, and such labor-force characteristics as age, sex, skill level, and education. These changes provide the central bench marks for the specific analysis of the characteristics of the Michigan labor force which are the focus of The Michigan Manpower Study.

The Michigan Economy in the 1970's -- The manufacturing, servicing, and operation of motor vehicles is a major source of income to a large portion of the working population of the United States. The motor-vehicle industry is especially important in the metropolitan area of Detroit, "The Automobile Center of the World", and to the economy of the entire state. Hence, any analysis of the future of the Michigan economy must incorporate, of necessity, a detailed evaluation of the principal factors affecting the growth of the American automotive market and an analysis of the extent to which the motor vehicles-and-equipment industries in Michigan will participate in that growth.

The analysis of consumer expenditures conducted as part of Battelle's basic study of the U.S. economy of the future indicates that automobiles and trucks will continue to play a dominant role in urban and intercity travel and in intercity freight movements. The projected growth of 89 per cent in U.S. consumer expenditures from 309 billion dollars in 1960 to 580 billion dollars in 1980 includes an increase of 93 per cent in expenditures for automobile transportation and of 83 per cent in net purchases of new and used cars. Total U.S. motor vehicle production for 1980 is estimated at 14.6 million units.

For the past half century, the manufacture of automobiles and trucks has played a pivotal role in the Michigan economy. Over the past 15 years, the expansion of manufacturing industries outside of the automotive circle and the growth of retail trade, service industries, and government have had little effect on the dominant role of the motor car upon Michigan's economic well being. Sharp, and sometimes very abrupt, fluctuations in the consumer market for automobiles have continued to bring quick and very marked changes in Michigan's level of employment and unemployment. The recent outstanding production years provide an illustration of the relationship between an expanding automotive industry and a booming Michigan economy. During the next 15 years, it is anticipated that Michigan's economy will continue to be closely associated with automobile production. The recent wave of investment in manufacturing and assembling facilities in Michigan indicates that the state will continue to have a major share of the nation's employment in motor vehicles and equipment.

The relatively rapid growth of employment in the services sector in the U.S. was emphasized in the earlier section. This same pattern will be especially significant for the Michigan economy. The maturation of the Detroit area and the growth of out-state urban areas will be significant contributing factors to rapid growth of employment in service-producing industries in Michigan. *Projections developed for The Michigan Manpower Study indicate that professional and related services will account for 22 per cent of total employment in Michigan in 1980, compared with only 12 per cent in 1960.* In contrast, manufacturing employment will comprise a smaller share of total employment, dropping from 38 per cent in 1960 to 29 per cent in 1980. Within manufacturing, the motor vehicles-and-equipment industry will continue to be significant in accounting for 41.2 per cent of total manufacturing employment in 1980, compared with 36.4 per cent of total manufacturing employment in 1960. The result of an industry-by-industry projection of employment growth in Michigan leads to a relatively optimistic outlook. A projected employment level of 3,936,000 persons will stimulate a modest amount of inmigration, which itself can be interpreted as a positive index of relative economic performance.

As the 1970's progress, the orientation of occupations to persons with "exceptional skills" underlines the importance of developing human resources, in order to assure that a shortage of skilled persons will not operate as a constraint on projected economic growth. In other words, our relatively optimistic employment projections can be realized only if appropriate policies are adopted to encourage the development of the required manpower and to provide an environment favorable to the retention of Michigan's skilled manpower.

The structure of employment by industry for Michigan and Detroit is shown in Figures 1 and 4. The projections of population, labor force, and employment are provided in Table 1.

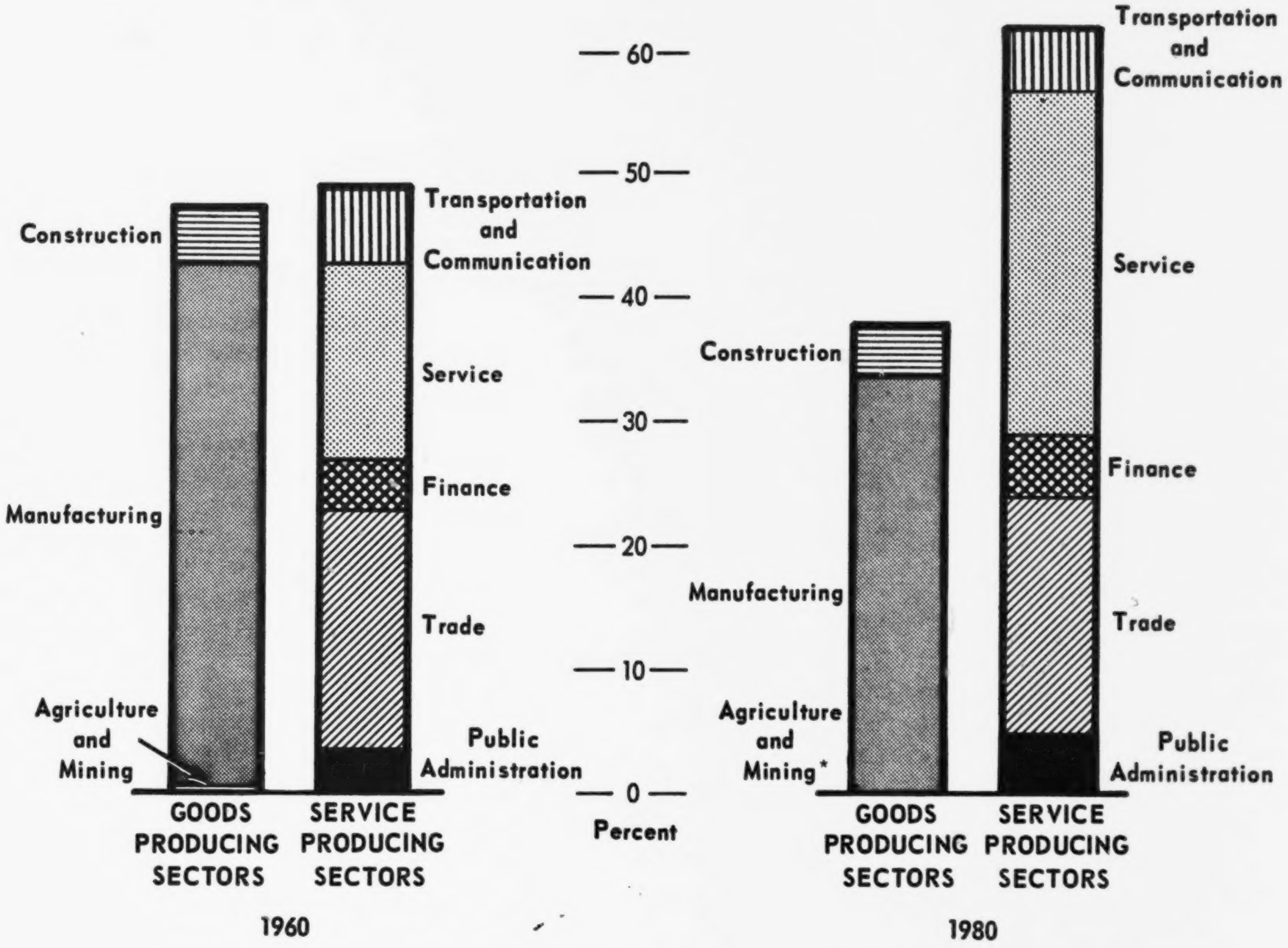


FIGURE 4. DETROIT EMPLOYMENT BY SECTOR, 1960 AND 1980

Source: Table 21.

*Agriculture and mining in 1980 is 0.2 percent.

Projected Occupational Changes -- The necessity for development of human resources in response to the demands of Michigan's economy of the 1970's is both a principal finding of the study and a major theme of this report. A number of the most rapidly growing occupations are those where academic and training requirements are high. For example, the 1960 Census data reveal that 45 per cent of engineers aged 45 to 54 had earned a college degree. Furthermore, 13 per cent of technicians aged 45 through 54 had college degree in 1960, and an additional 21 per cent had post-high-school, subbaccalaureate training. A comparison of the formal educational attainment of younger workers and older workers in the same occupational category suggests that entry qualifications are becoming more stringent.

Although the professional occupations which typically require college degrees will demonstrate exceptional growth, it is important to emphasize that these occupations will still represent only 17 per cent of total employment in 1980. While this is a substantial increase from the 11 per cent which these occupations represented in 1960, we must keep in mind that significant growth in other occupational categories will be associated with the changing industry and occupation profiles of Michigan's labor force between 1960 and 1980. Of the total increase in employment which is expected to occur between 1960 and 1980, 31 per cent will be accounted for by professional and technical occupations. An additional 24 per cent will represent occupations in the clerical field where entry requirements show considerable variation from job to job. That is, the required relationship between formal education and on-the-job responsibilities of bookkeepers, secretaries, stenographers, and typists varies considerably. In 1960, for example, 12 per cent of all secretaries had less than a high-school

TABLE 1. POPULATION, LABOR FORCE, AND EMPLOYMENT IN MICHIGAN AND DETROIT S.M.S.A. FOR THE PERIOD 1960-1980

	Michigan			
	1960	1970	1975	1980
Total Population, thousands	7,824	8,600	9,360	10,200
Population 14 and Over, thousands	5,349	6,100	6,730	7,400
Labor-Force Participation Rate, per cent	55.0	55.5	55.3	55.8
Civilian Labor Force, thousands	2,944	3,400	3,720	4,100
Employed, thousands	2,727	3,200	3,600	3,900

	Detroit S.M.S.A.			
	1960	1970	1975	1980
Total Population, thousands	3,762	4,200	4,400	5,000
Population 14 and Over, thousands	2,580	3,000	3,200	3,600
Labor-Force Participation Rate, per cent	55.8	56.1	56.1	55.9
Civilian Labor Force, thousands	1,441	1,700	1,800	2,000
Employed, thousands	1,329	1,600	1,700	1,900

Sources: 1960 - 1960 Census of Population, Vol. 1, Characteristics of the Population, Part 24, Michigan, Tables 17 and 197.
1970 to 1980 - Battelle estimates.

Note: The difference between "civilian labor force" and "employed" should not be construed as a projection of unemployment. It is a residual which includes estimating errors; which can be plus or minus, offsetting or cumulative, as well as unemployment.

education, another 58 per cent had a high-school diploma, and 30 per cent had a post-high-school education.

Furthermore, there will be increasing employment opportunities for young people in the highly skilled craft categories, such as carpenters, electricians, plumbers, and related occupations. While total employment for carpenters is expected to increase only from 25,713 in 1960 to 26,430 in 1980, it is significant that, in 1960 19 per cent of all carpenters in Michigan were 55 years of age or over. In other words, the replacement demands which will be generated by retirements and deaths of older workers in these categories will create a large number of openings for young persons who have acquired the requisite skills.

Finally, the occupational analysis includes specific consideration of some emerging new occupations which are likely to move to a much higher ranking in terms of the absolute numbers of employees in these occupations. For example, it is estimated that the number of electronic technicians will grow from an estimated level of 600 in 1960 to nearly 1400 in 1970, and to 3600 in 1980. This rapid growth is anticipated because of the increased application of electronic systems and equipment for industrial and commercial use. Increased investment in electronics will be necessary to automate and mechanize production processes. In addition to the electronic technician, a second emerging occupation which has received considerable analysis in the Michigan Manpower Study is the numerically-controlled-machine-tool operator. Because of the novelty of this occupational category, it is especially difficult to evaluate the precise number of numerically-controlled-machine-tool operators in Michigan. In terms of the inventory of machine tools, it appears that the number of operatives of numerically controlled machine tools will increase by a factor of about 20 during the period between 1965 and 1980. Nevertheless, the total number of operatives of numerically controlled machine tools will still be relatively small at that time, approximately 5200 persons. The significance of numerically controlled machine tools lies in the fact that these machines offer a significant productivity benefit over the more conventional machine tool, a productivity factor which ranges from three to eight. Hence, one implication of the increase of operatives of numerically controlled machine tools is that, by 1980, there may be a 10 to 20 per cent reduction in operatives of conventional machine tools.

Methodology -- The labor-force analysis which is used in the model developed for the Michigan Manpower Study essentially involves a

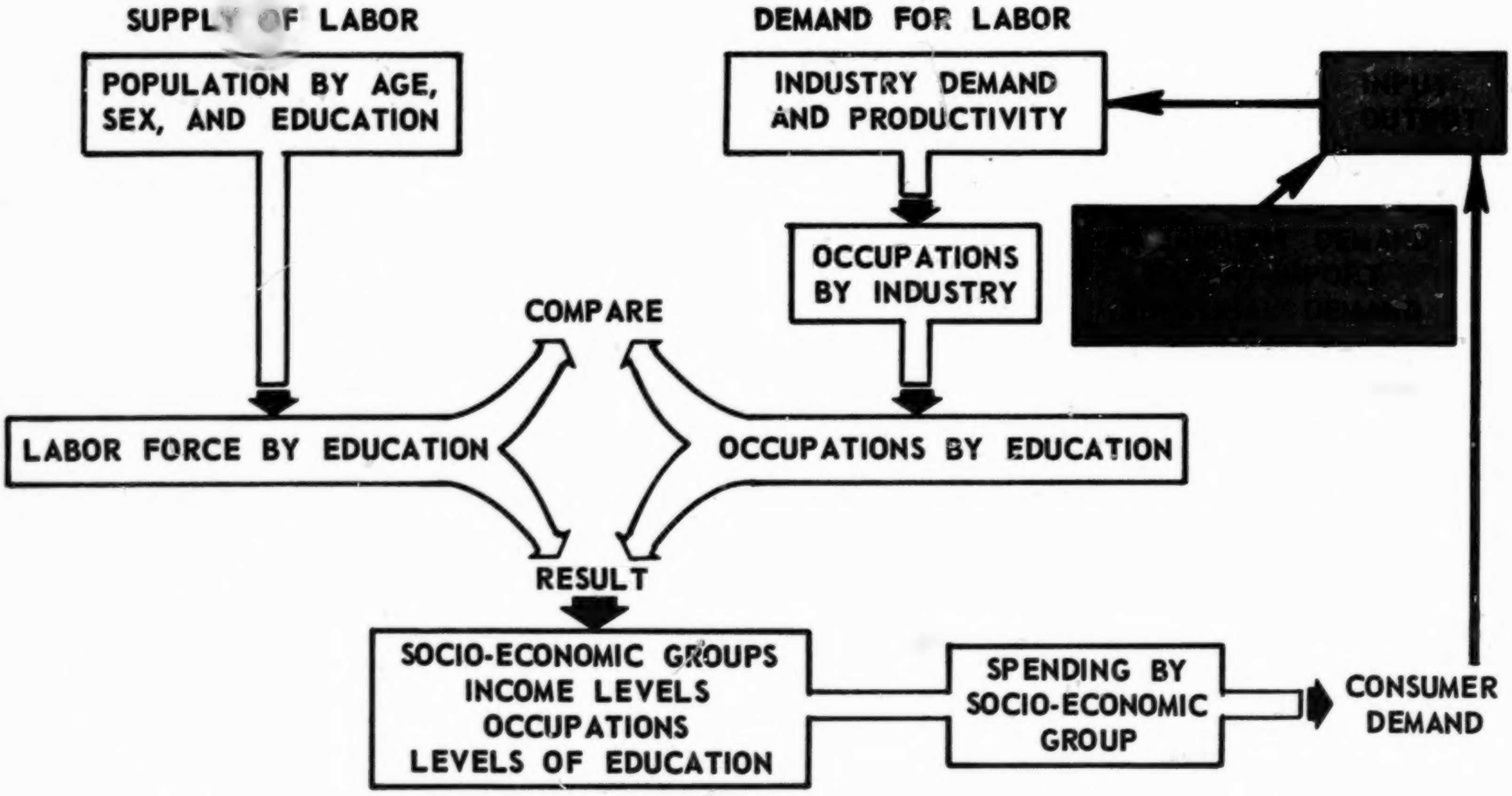

SUPPLY OF LABOR
POPULATION BY AGE, SEX, AND EDUCATION
DEMAND FOR LABOR
INDUSTRY DEMAND AND PRODUCTIVITY
INPUT OUTPUT
OCCUPATIONS BY INDUSTRY
COMPARE
LABOR FORCE BY EDUCATION
OCCUPATIONS BY EDUCATION
RESULT
SOCIO-ECONOMIC GROUPS
INCOME LEVELS
OCCUPATIONS
LEVELS OF EDUCATION
SPENDING BY SOCIO-ECONOMIC GROUP
CONSUMER DEMAND

FIGURE 5. MAIN ELEMENTS OF BATTELLE'S SOCIO-ECONOMIC MODEL

reconciliation of the supply and demand for labor, using educational attainment as the equating variable. The methodology focuses on use of a detailed matrix of the occupational profiles in individual industrial sectors of the economy. The purpose of this analysis of labor-force characteristics is to identify the type of manpower requirements which will be associated with the economic growth of Michigan's industries, and in particular, to utilize the occupation-by-industry matrix to provide a summary of the influence on specific occupations of technological changes in the processes used to produce the output of economic sectors.

The projections developed in the Michigan Manpower Study rely heavily upon a special tabulation of the 1960 Census which provides a unique level of cross-sectional detail of the characteristics of employees in individual industries. The model additionally incorporates detailed projections of the population by age and sex, projections of educational attainment for the population of labor-force age, and an evaluation of labor-force participation by each age and sex category, in addition to projections of employment by industry sector and distribution of employment by occupation within that sector. The elements of the supply and demand analysis are presented in Figure 5.

The estimates of labor-force characteristics which were developed by Battelle Memorial Institute in the Michigan Manpower Study will serve as a framework for updating specific estimates as additional information becomes available and for evaluation of particular characteristics of selected labor-market areas. During the development of the methodology, labor-market analysts at the Michigan Employment Security Commission were involved in several training sessions to facilitate their utilization of the model on a continuing basis.

Guidelines for Action Programs -- The Michigan Manpower Study has clearly delineated the characteristics of the labor force for Michigan and Detroit in the 1970's. The underlying feature of the projected labor-force characteristics is an increasingly greater linkage between the educational system and the labor force. The projections describe the emergence of a new socio-economic structure for Michigan's economy. During the Agricultural and Manufacturing Eras, a large proportion of jobs were in manual occupations requiring dexterity and experience. The activities in classrooms had little relationship to job functions. In contrast to this situation, the Human Resources Era is characterized by a high proportion of occupations in white-collar activities, especially in those of a professional and technical nature. These occupations typically require development of specific skills in the classroom, ranging from mathematical aptitudes and skill in self-expression to the development of general analytical ability.

The "middle ability" proportion of the population (the 67 per cent of the population within one standard deviation of average intelligence) will be the segment of the population for which, in many respects, the Human Resources Era will have the greatest impact. Traditionally, the "middle ability" person has found entry into the labor force via occupations demanding little specific skill development. After entry, these persons move up the ladder of occupational achievement through on-the-job and other formal training and skill acquisition by experience. As occupations increasingly require specific technical skills for entry, the technical-education program of the high-school system will acquire much greater importance. Hence, a considerable expansion of post-high-school, subbaccalaureate educational programs may be anticipated in response to demands of the labor force.

Vocational education occurs in several types of institutions:

(1) The public-area vocational school
(2) Vocational programs in high school
(3) The private trade, technical, and business school
(4) Community college
(5) Colleges and universities
(6) Adult vocational education in public and private schools.

In addition to the formal education system, skill acquisition is made possible through individual study programs, supplementary educational experiences, such as business- and industrial-sponsored vocational programs, apprenticeship programs, and special governmental activities such as Manpower and Development Training Act programs and Economic Opportunity Act programs. From the standpoint of state and local government, it is especially important that Michigan's agencies must continue to coordinate their activities in manpower development and training so that the broad spectrum of educational opportunities will be meaningful in terms of the requirements of the labor force and the aptitude potentials of the population.

The achievement of the economic growth projected in The Michigan Manpower Study will occur only if adequate resources in addition to human resources are also developed. Problems related to transportation, air pollution, water resources, and financial resources must also be dealt with if we are to have sustained economic growth. Failure to develop effective policies in any of these areas can operate as a constraint on economic development.

While The Michigan Manpower Study has emphasized the vocational function, it is also important to underline the fact that vocational development will remain only one of several functions of the educational system. Education for citizenship, for compensatory programs to meet the needs of the disdavantaged, for personal satisfaction, for public health and safety, and other societal needs will remain an important focus of education. The Michigan Manpower Study has focused on the vocational dimensions of education primarily to draw attention to the growing importance of the vocational function in the emerging Human Resources Era.

INDIANA MANPOWER TRENDS TO 1975

Martin Heller
Indiana Employment Security Division

In this presentation of the methods used in making projections for the State, I will cover four aspects of the problem -- population distribution, the labor force supply, industry employment demand, and the changes in occupational demand.

Population Distribution -- We were primarily interested in the prospective changes in the age structure of the population aged 14 and over. The first step was to take the population by sex and age found in the 1960 Census and survive the people to 1965. This was done by multiplying the number in each five year age interval by the age-specific survival rate computed from the 1962 life tables. This gives an estimate of the number of people who survived in 1965. The number of children born between 1960 and 1965, available from the State Board of Health, was then added and survived. Since there was a net outmigration from the State between 1960 and 1965, the computed population distribution was adjusted by prorating the net outmigration over the age groups. This method provides an estimate of the age distribution of the population in 1965.

To get to the 1975 age distribution, the five year age groups were survived to 1970 and then to 1975, again using the appropriate age-specific survival rates. The number of births was projected by using a fertility ratio for the women between ages 15 and 44. The age groups zero to four and five to nine were thus taken care of.

In regard to migration, we left it open-ended and did not make any assumption that net migration between 1965 and 1975 will be net in- or out- migration. If the number of people migrating into the State was the same as the number migrating out of the State, then the net migration would be zero. A net out-migration during the 1965-75 period would decrease the projected population, while a net in-migration would increase it.

Obviously employment is a factor in determining migration. A state with a vigorously expanding economy and plentiful job opportunities will tend to attract workers from other states and conversely a state whose major industries are declining is likely to experience a net out-migration, but it is not clear to what extent a net loss or a net gain is explained by employment trends, or to what extent migration between states is influenced by factors unrelated to employment. Since migration is at least partly a result of employment trends it seems more reasonable to consider first how the state's population and labor force will compare with the projected employment. Net migration can then be considered as one source for balancing a shortage or surplus.

Labor Force Supply -- The next step in making the projections was to estimate how many people will be in the 1975 labor force. The size of the labor force and its distribution by age was projected by applying age-specific participation rates to the projected age distribution of the population. The 1965 labor force participation rates were estimated by modifying the 1960 state participation rates with the changes in the national participation rates between 1960 and 1965. To obtain a set of participation rates for 1975, the 1960 state rates were again modified by the changes in the projected national participation rates which were available. The assumptions of the projected national participation rates include lower participation rates for male youth and older men, while the participation rates of women are assumed to continue increasing. In this way, the state rates are projected to show changes similar to the national rates. The end result of these computations is a labor force supply which incorporates the changes in the age distribution of the population and the assumed changes in the labor force participation of the various ages.

Industry Employment Demand -- The next step was involved with determining the employment demand by industry in future years. Here we wanted to relate the state's employment demand specifically to the changes in the nation's economy. We also wanted to take into consideration technological change and its effect on state employment. First, the historical data were examined by means of simple and multiple regression methods, which enabled us to include 17 years of annual average data upon which to estimate the relationships, if any existed.

As the dependent variable, employment, or rather, the number of jobs, was measured by our series of industry employment. I might mention at this point that we operated at the level of industry groups, like durable goods manufacturing, rather than at a more detailed industry level, such as electrical machinery or fabricated metals, which are components of durable goods manufacturing.

If we consider that the national economy is measured by the value of gross national product and that Indiana's industries produce for a national market, then we might find some association between an industry's portion of GNP and the industry's employment in the state. Two articles in the Survey of Current Business present a set of accounts on the measures of the physical volume of the gross national product originating in the various industries of the nation. Industry gross product can be measured as the amount by which an industry'a total product exceeds the value of the materials and services it buys on current account. For our purposes, the series of real gross product in 1954 dollars were used. In our final equations, industry gross product was used as a variable only for durable goods manufacturing, construction, transportation, and service and miscellaneous.

The next item that interested us was the effect of technological change on employment. We assumed that technological changes are introduced and diffused throughout industries through time and further that Indiana employers adopt the technological changes at the same rate as the rest of the nation's employers. Although we did not measure any specific technological changes directly, we did use the Index of Output per Manhour as a variable for productivity changes which are partially attributable to technological changes. The Index of Output per Manhour (Manufacturing) was used in the equation for durable goods manufacturing employment and the Nonmanufacturing Index was used for construction employment. So for two of the industry groups, durable goods manufacturing and construction, the state employment in the industry was considered as a function of the industry gross product and the Index of Output per Manhour. A time value "t" was also included in the equation for construction employment. These relationships were also computed by using first differences which reinforced the acceptance of the estimating equations.

The other industry groups were examined for any significant relationship between state industry employment and industry gross product and productivity, but none were used because of the problems of serial correlation and multicollinearity. Instead, either a simple or log trend was computed for the state employment in those industry groups. Simple trends were used for public utilities, trade and all other nonagricultural employment, while log trends were used for government, agricultural, and finance, insurance, and real estate employment.

Some industry subgroups were determined from the relationship between the industry group employment and the subgroup employment. These were wholesale trade and retail trade which were related to the industry group trade. Also the subgroups government-educational services and government-except educational services were related to the industry group government.

Nondurable goods manufacturing employment was computed on the basis of its relationship to durable goods manufacturing.

The data used to estimate the coefficients in the regression equations and the trend equations were annual averages for the years 1947 to 1963, with the following exceptions: 1947-62 data were used for the durable goods and the nondurable goods manufacturing equations, and 1950-1963 data were used for the agricultural series.

After obtaining the equations, the next step was to determine the 1975 values of industry gross product and the Index of Output per Manhour to be used in them. On the one hand, we were interested in having a set of projections of employment demand for Indiana when real GNP grows at its average rate of the postwar period. We also wanted to estimate what the employment demand in the state would be if GNP increased at a faster rate than the long term average. For convenience we will call the first, where real GNP increases at a 3.34 per cent rate, the low set; and the alternative, where GNP increases at a 4 per cent rate, the high set. The 4 per cent growth rate was regarded in the 1966 Manpower Report of the President as the lowest rate of growth which would be sufficient to keep national unemployment at a constant rate. To reduce unemployment to the 3 per cent level, it was estimated that the economy would have to grow at an annual rate of about 4.5 per cent. As you know, the growth rate of GNP during the past few years has been well above 4.5 per cent.

After computing the 1975 values of real GNP resulting from the two growth rates, it was necessary to break them down into the industry gross product values which would be used in the employment demand equations. This was done by first relating the total of the goods-producing industries and the total of the service-producing industries to total GNP. Then the gross product of the component industry group was related to the gross product of either the goods-producing or the service-producing total gross product. By this method we computed 1975 industry gross product values which were consistent with the 1975 GNP values obtained from alternative growth rates. As was mentioned earlier, the industry gross product values would be used in the equations for durable goods manufacturing, construction, transportation, and service and miscellaneous.

The other variable, the Index of Output per Manhour (Manufacturing) which is used in the equation for durable goods manufacturing, and the Index of Output per Manhour (Nonmanufacturing) used in the construction equation were projected to increase at the same average annual rate of the period 1947 to 1963, a 2.5per cent rate.

After the equations were adjusted to the 1965 level, the 1975 values of industry gross product and the Index of Output per Manhour were inserted to obtain the 1975 projections of the employment demand in those industry groups for the low set and the high set.

For the other industries where trends in employment had been computed, the historical rates were projected for the low set. For the high set values, the trend rates were increased ten per cent. We thus end up with two sets of projected employment demand by industry for 1975 -- a low set with GNP assumed to grow at a 3.34 per cent rate, and a high set with GNP assumed to grow at a 4 per cent rate.

Occupational Demand -- We will now turn to the methods used for projecting the occupational demand. The things that we want to consider in making these projections are the mix of industries in the state, the employment levels of the industries and the changes in the occupational distribution of the industries.

Keep in mind a matrix with the industry groups listed on the left hand side and the occupational groups across the top. For each industry, we would have the occupational distribution, either numbers or proportions. Our base is the 1960 matrix obtained from the 1960 census of population and adjusted to distribute the people with "occupation not reported" and "industry not reported" over the cells. For an estimate of the 1965 matrix, we used the per cent changes in the national occupational per cent matrix between 1960 and 1964 and applied these per cent changes to the state's 1960 proportion matrix. The modified proportion matrix is then applied to the previously obtained 1965 industry totals to estimate the occupational distribution. This procedure is dependent upon the assumption that whatever changes are occurring in the occupational proportions of each industry because of technological and social change on a national basis, are also occurring in Indiana. The different technological and social changes are diffused at differing rates throughout the industries through time but any specified technological change may occur abruptly in localized time and place.

To project the 1975 occupational demand, I made judgmental changes in the occupational proportions in each industry group on the assumption that technological and social changes occurring require an increasing proportion of professional, scientific and technical people and a decreasing proportion of laborers. The modified occupational proportions were then applied to the industry employment demand totals to obtain the occupational demand in 1975.

The industry employment demand figures used for the occupational distributions are census-type figures. They differ from the industry employment demand figures which were establishment type figures. Approximations of the census-type industry groupings were made by reallocation of the establishment-type industry employment demand to the appropriate census-type groupings. Then the per cent changes of the reallocated establishment-type industries between 1960 and 1975 were applied to the 1960 census industry groups so that industry employment projections on a census-type basis would be obtained. The projected occupational proportions were then applied to the census-type industry employment demand projections for the occupational demand in 1975.

Population Changes -- Indiana's population may increase 15 per cent between 1965 and 1975. From the estimated 4,862,000 people that there were in 1965, the population may rise to about 5,590,000 in 1975. Thus there may be about 725,000 more people by 1975.

The most prominent changes in the age structure are occurring because of the increased number of births in the period following the Second World War. Prior to that, the birth rate during the depression years of the 1930's had dropped to a low level. As a consequence, the age group 25-34 decreased in size between 1960 and 1965. During the next ten years, as this group grows older, the age group 35-44 will decrease about 11 per cent.

The higher birth rate following the Second World War will be reflected in the age group 25-34, which will increase about 37 per cent between

1965 and 1975. In the younger group aged 18-24, there will be about a 40 per cent increase.

There will also be more people in the older age groups: nine per cent more in ages 45-54, 15 per cent more in ages 55-64, and 12 per cent more in the group aged 65 and over.

Labor Force Changes -- How large a labor force can be expected by 1975? There may be 2,212,000 people, which will be 15 per cent more than the 1,927,000 people in the labor force of 1965. One of the prominent changes will be the 15 per cent decrease in the number of male workers aged 35-44, a prime age group providing many of our professionals, skilled workers and executives. This decline presents the possibility of continuing shortages of experienced workers with specialized skills. The other major change will be the greatly increased number of younger workers aged 18-24, a group which will be 38 per cent larger by 1975. The problems of educating and training these future workers are with us right now, because they presently are attending elementary school or are starting in high school.

The addition of 285,000 people to the labor force by 1975 follows the increases of past years, when the labor force increased 129,000 between 1960 and 1965. The size of the labor force is dependent upon the combination of the larger population and the prospective changes in the labor force participation rates of the various age groups.

It is anticipated that among men 25-54 years old, the proportion working will continue at approximately the same high levels as in the past. Among men aged 55 and over there will be a decrease in the proportion working because of earlier retirements.

For males under age 25, slightly lower participation rates may be expected since more of them will remain in school to continue their education. The continued movement of women from the home to outside employment is expected to counterbalance the decline in participation rates for youth and older men -- with most of the increase in labor force activity of women concentrated, as in the recent past, among those aged 35-64.

Let's look at Chart 1 (p. 69) which shows the male labor force changes. All of the age groups are increasing, except the two in the lower graph, the age group 35-44 and the age group 65 and over. The 15 per cent decrease in the age group 35-44 between 1965 and 1975 occurs because during the 1930's the birth rate declined to a lower level. For this reason, the experienced workers of this age group who have developed their specialized skills will be in short supply and it may be necessary to develop more of the people in the next older age group 45-54 for positions of responsibility and supervision. On the other hand, the skills may have to be developed in the age groups younger than 35. At present, these people are younger than age 25.

In the years ahead, we will see a greater number of young people in the age groups 18-24 and 25-34 because the birth rate increased after the Second World War. By 1975, there will be an additional 98,000 male workers in the age group 25-34, which is 37 per cent more than in 1965. The age group 18-24, numbering about 196,000 in 1965, will be about 75,000 greater in 1975, a 39 per cent increase.

When we turn to Chart 2 (p. 70), which shows women in the labor force, similar changes can be noted. The age groups 18-24 and 25-34 will increase about one-third and the age group 35-44 will decrease about six per cent. In the age groups 45-54 and 55-64, the number of women will increase about 25 per cent. The greater increase for women is due in part to the higher

Chart 1

INDIANA MALE LABOR FORCE BY AGE
1960 - 1975

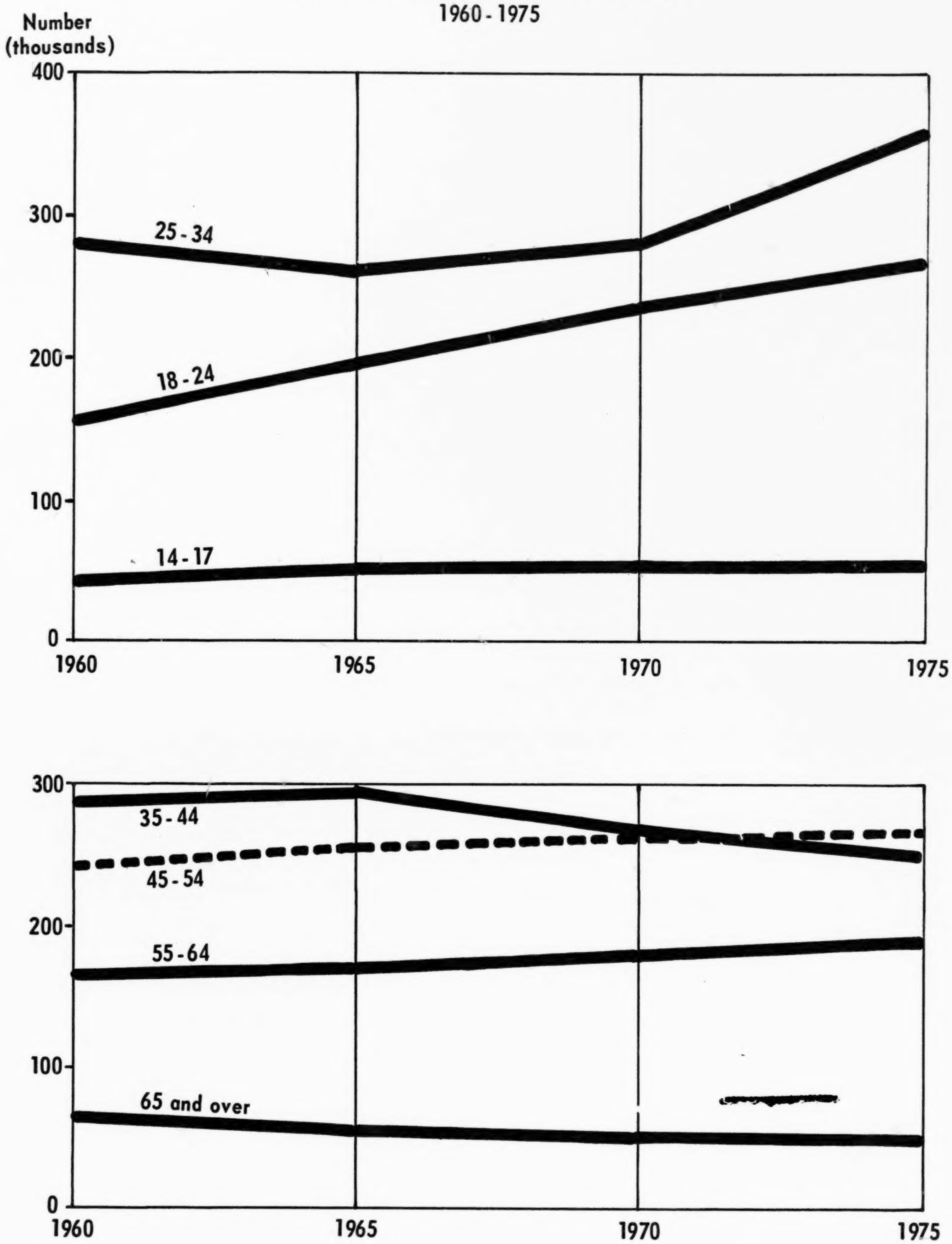
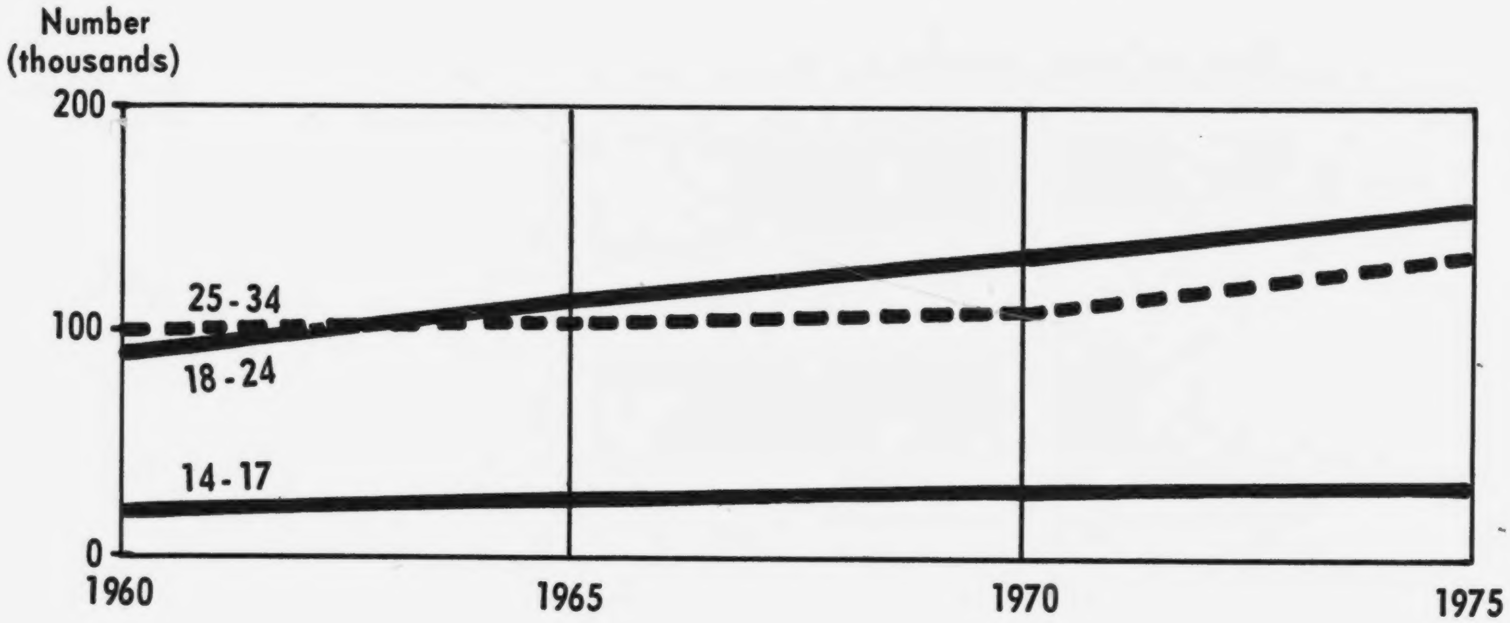
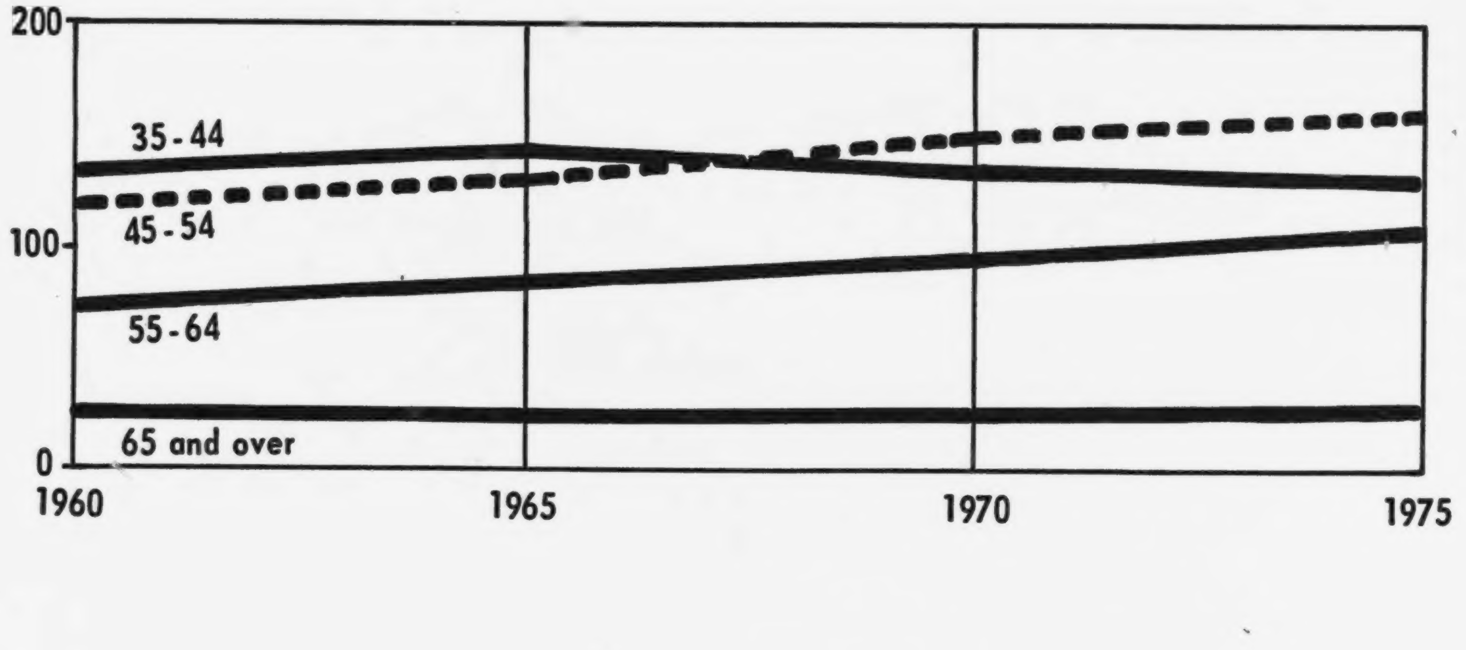


Chart 2

INDIANA FEMALE LABOR FORCE BY AGE
1960 - 1975





participation rates which are expected.

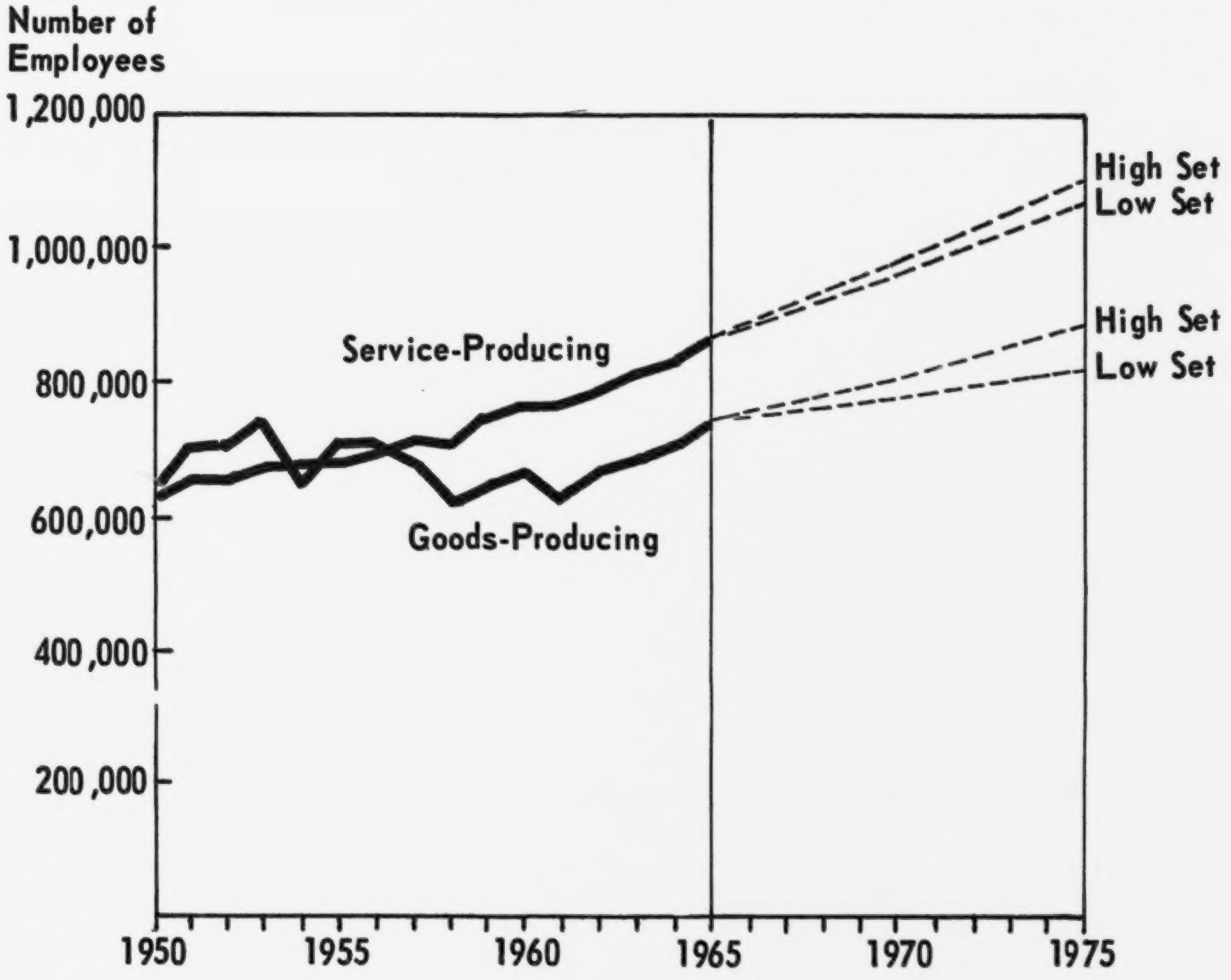
Industry Employment Demand Changes -- Overall, employment demand in the service-producing industries is expected to increase at a faster rate than in the goods-producing industries, continuing the experience of past years, as shown in Chart 3 (p. 72). The service-producing industries include wholesale and retail trade; finance, insurance and real estate; transportation, communications, and utilities; service and miscellaneous; and government. The goods-producing industries include manufacturing, construction, and the mining and quarrying group.

With high set assumptions, employment demand in the service-producing industries may increase about 27 per cent between 1965 and 1975 while the goods-producing industries may increase about 18 per cent. Using low set assumptions, the projections show a 23 per cent increase in demand in the service-producing industries and a nine per cent increase in demand in the goods-producing industries. The service-producing industries now employ more than the goods-producing industries and are expected to account for over 60 per cent of the increase in non-farm employment between 1965 and 1975.

With high set assumptions, the projections indicate the following per cent changes in employment demand for the industries between 1965 and 1975. Among the goods-producing industries, durable goods manufacturing employment demand may increase 26 per cent while nondurable goods manufacturing employment demand may increase about six per cent. Mining and quarrying jobs may decrease 19 per cent. The demand for construction workers may be five per cent less in 1975. (See Chart 4, p. 73)

The number of agricultural jobs will probably decline further for a 35 per cent decrease by 1975.

Chart 3 EMPLOYMENT AND PROJECTED EMPLOYMENT DEMAND IN THE GOODS-PRODUCING AND SERVICE-PRODUCING INDUSTRIES, INDIANA 1950-1965 AND PROJECTED 1970 AND 1975



Goods-Producing Industries:

- Manufacturing
- Construction
- Mining and Quarrying

Service-Producing Industries:

- Wholesale and Retail Trade
- Finance, Insurance and Real Estate
- Transportation, Communications, Utilities
- Service and Miscellaneous
- Government

Chart 4

EMPLOYMENT AND PROJECTED EMPLOYMENT DEMAND IN GOODS-PRODUCING INDUSTRIES, INDIANA 1947-1965 AND PROJECTED 1970 AND 1975

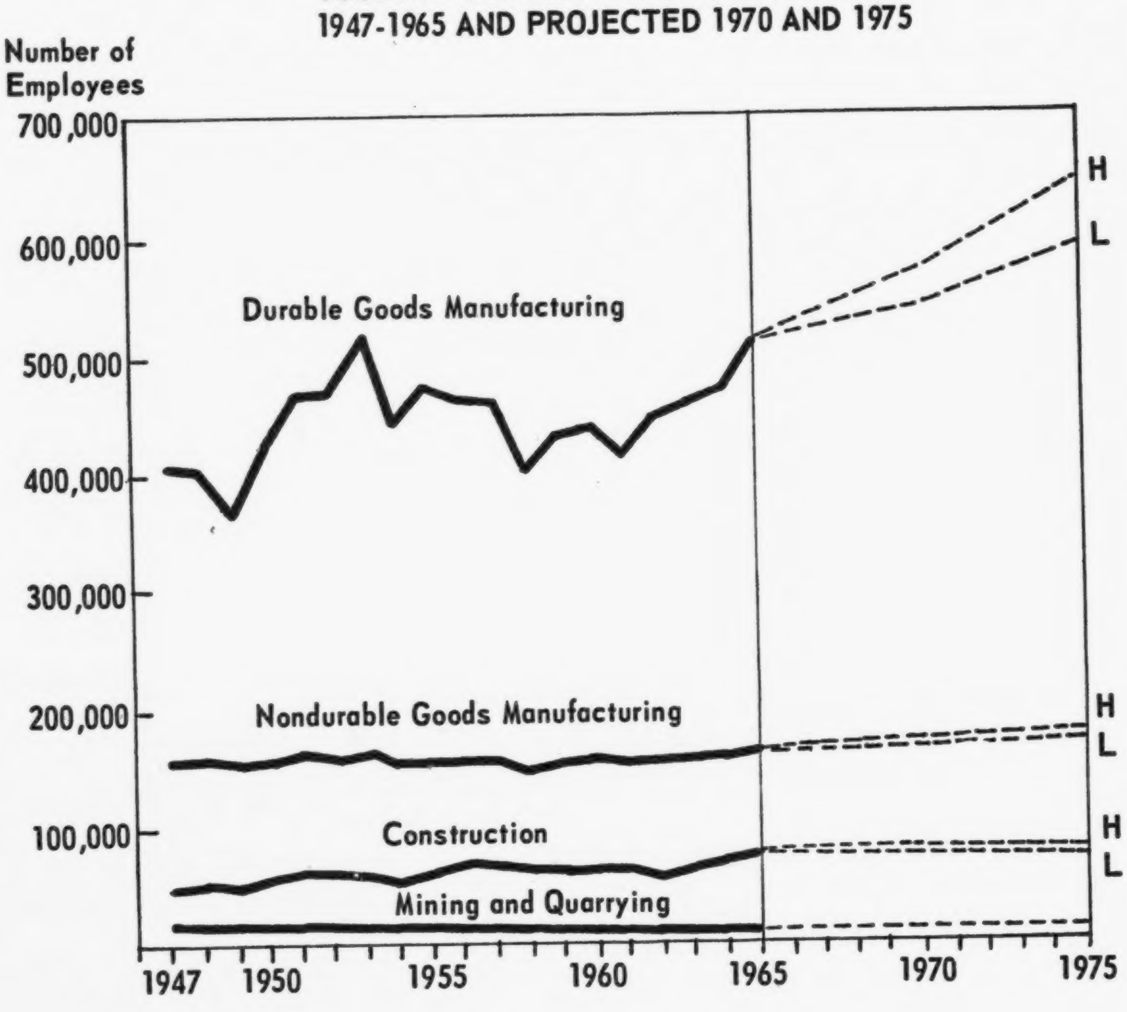
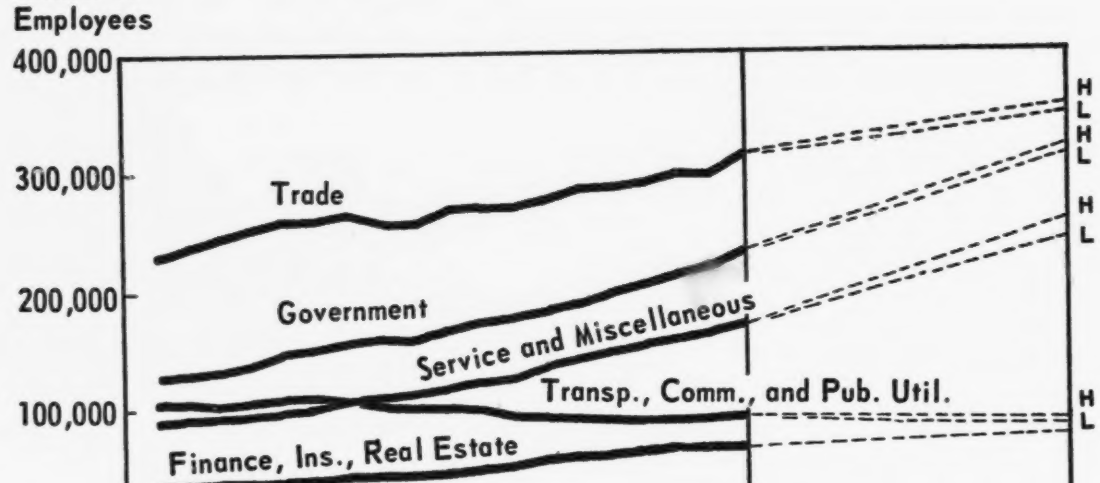


Chart 5

EMPLOYMENT AND PROJECTED EMPLOYMENT DEMAND IN SERVICE-PRODUCING INDUSTRIES, INDIANA 1947-1965 AND PROJECTED 1970 AND 1975



In the service-producing sector, the demand for workers in service and miscellaneous may increase the most, being over 50 per cent greater in 1975. Besides the services that come to mind when this grouping is considered, such as auto repair services or laundering and dry cleaning services, the grouping also includes business services such as advertising, accounting, and bookkeeping services, medical and health services, in addition to other services of a professional nature.

Demand in the finance, insurance, and real estate industry group may increase about 24 per cent. Wholesale trade demand for employees may increase about 16 per cent while retail trade may have a 12 per cent increase. The transportation, communications, and utilities group demand may decrease about three per cent from the 1965 level.

Although government demand for employees may increase about 41 per cent by 1975, this change will be largely attributable to the educational services portion of government employment, which may increase about 68 per cent. The demand for other government workers may increase only about 18 per cent. Examples of other governmental services would be the police, fire, highway and sanitation departments. (See Chart 5, p. 73)

Supply and Demand -- We will now consider how the manpower supply and demand projections compare.

The labor force supply in 1975 will consist of about 2,212,000 people, exclusive of any gain or loss from migration.

The industry demand for employees is given by the two sets of projections. The main difference between the two sets is that the low set includes the assumption that real GNP will continue to increase at the average annual compounded rate (3.34 per cent) of the period 1947 to 1964, while the high set includes the assumption that real GNP will grow at a four per cent compounded rate between 1965 and 1975.

On the demand side, industry employment needs developed from these alternative assumptions would be a 1975 low set demand of 2,130,000 or a 1975 high set demand of 2,234,000. The labor force available in 1975 would be adequate to meet the low set demand and there would be about a four per cent unemployment rate. With a 1975 high set demand, the labor force would not be adequate, given the assumptions underlying the projections.

Occupational Demand Changes -- Turning to the occupational demand in 1975, we have computed a set based on the high set industry projections. (See Chart 6, p. 76) These indicate that professional, technical and kindred workers will have the largest increase in demand of any of the occupational groups, increasing about 60 per cent by 1975. This group generally requires the longest period of education. The managers, officials, and proprietors group demand may increase about 17 per cent between 1965 and 1975. The clerical and kindred workers group demand may increase about 22 per cent. The demand for sales workers may increase 14 per cent.

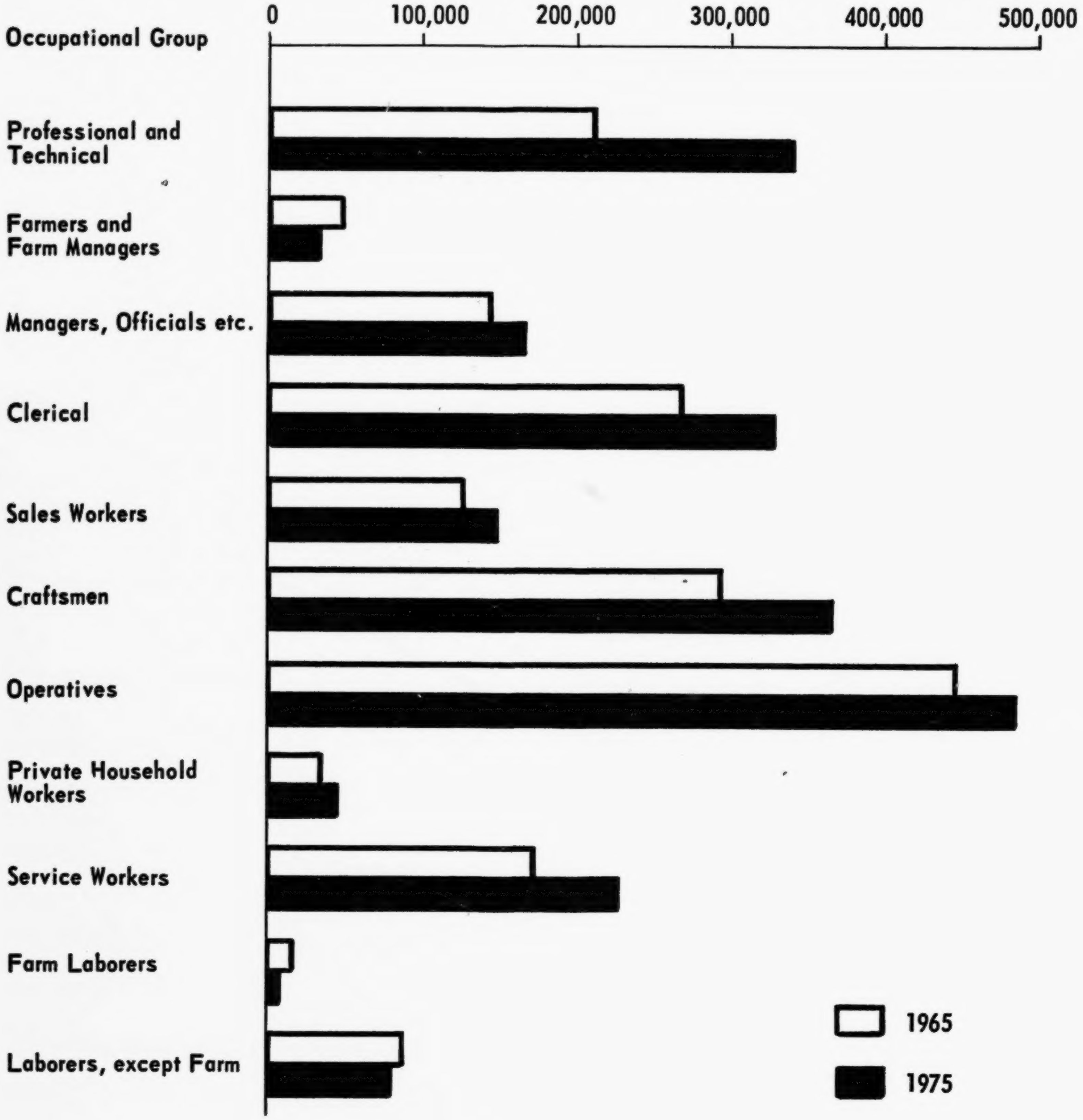
Among blue collar workers, the craftsmen, foremen and kindred workers group demand may increase about 23 per cent. The demand for operatives and kindred workers may increase about nine per cent with the major portion of the increase being in the durable goods manufacturing group. The demand for laborers may decrease about ten per cent by 1975.

Private household worker demand may increase about 19 per cent. The service workers group demand may increase about 32 per cent by 1975.

Finally, the demand for farmers, farm managers, laborers, and foremen may decrease about 37 per cent.

Chart 6

EMPLOYMENT DEMAND BY OCCUPATIONAL GROUPS, INDIANA 1965 and 1975



PERSONNEL SKILL DATA SYSTEM

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Thank you very much, Jim, and good afternoon, ladies and gentlemen. I'm just delighted to be here and to participate with you in your conference today. Jim has asked if I might cover a subject which is of great interest to me and which, hopefully, is of interest to you. I'd like to get right into the subject of personnel data skills. I'm also going to cover several related applications of data processing equipment, because they all work in so closely together and are so interrelated that I think it would be futile to try to cover one without the other.

The previous two speakers have set up a pretty good background for me, unknowingly. They both emphasized the growing need for knowledge of skills of people. If you will recall one of the charts Joe Duncan had on the screen, it showed the aptitudes of workers versus the demand for aptitudes. He made the point of the unused, or not fully used aptitudes, which have a dominant effect of replacing people of lower aptitudes and therefore not getting the most out of them. And this is the thing that has been of concern to us, and so what I have to present here today consists largely of a review of a number of slides that cover our program and what we are doing about trying to utilize the capabilities and skills of the people in the IBM company.

So, if I may, let's start with the first slide, which portrays the various areas that we are trying to do something about: improving our knowledge of our personnel and utilization of people; knowledge of their skills; and where they are and what they can do. We call it the personnel data system. We will get into each one of these items in greater detail a little later. Manpower utilization concerns us very greatly -- do we have the people in the right place so that we can use their skills and capabilities at the proper times? Salary planning, administration and control places quite a bit of stress on management, and can not be done really well without adequate information.

We have in our company a program of appraisals, in which we ask that our managers observe, evaluate, and appraise the performance of each of their people, and have an appraisal and counseling interview at least once a year, accurately and properly making a record of that appraisal interview. We find it necessary, as I am sure you do, to follow up continually to see that this program is on schedule and is performed properly and adequately. Then, finally, we have special manpower analysis, which can be just about anything you might request. We will get into each of these areas in a little more detail.

I might just go back a little bit prior to our getting into this personnel data system. We found that we had all kinds of information and all kinds of records about our personnel, but we had them scattered in many places. To try to find out all we needed and wanted to know, or felt we ought to know, about any one individual, it might have been necessary to go to six, eight or even ten different areas or locations. We got into this thing, really, because we wanted to develop a skills inventory. As we considered the necessary effort of gathering the data together for a skills inventory, we found that there could be many other advantages and these are some of them: the utilization of personnel so that we make them as productive as possible, whether they are working in a plant, or in a sales organization, or in an administrative or clerical function. We could better utilize them, and by the same token provide the greatest opportunities for each of them as individuals. We found, and I am sure most of you do, that one of the most difficult assignments that management has today is selecting personnel to fill those jobs which are constantly opening, and require some additional employee responsibility, and therefore provide promotional opportunities. We found in many cases that these promotional opportunities were filled largely on managers' subjective knowledge of individuals. If we could gather quantitative and qualitative information about each individual, we could provide a more objective means of selecting candidates for promotional opportunities.

Another advantage arose from the fact that this system demonstrates a real interest on the part of management in our employees. I think that those of you who are concerned with morale would recognize that this is a most important factor. Interest -- because employees participate in providing information that goes into the record and because the information does call management's attention to things that should be done in the interest of the employees. The employees understand that since the information is available in an objective way, they may have a better opportunity for advancement. Self development -- because employees are participating and contributing to the record and the knowledge that it was available. We have found that many of our employees have developed an additional interest in their own personal development and are taking advantage of every opportunity that they can to improve their skills and capabilities. Manpower planning -- we are involved in this area because we have a marketing function, and we are concerned primarily in determining what our needs are going to be down the road as much as two, or three years, or even longer. Those of you who are concerned with manufacturing processes, I am sure, can visualize how manpower planning, with specific data and information, can be helpful to you in determining what your hiring and recruiting efforts should be in the immediate future, and for the longer range.

Because everything is together on tape we can get all kinds of statistical analyses that are most helpful, and get them quickly and accurately. We have in our marketing function an industrial psychologist who is in charge of our personnel research, and who conducts employee surveys, among other things. He feels that he is in pretty much of a paradise, because he is able to get information helpful to him in his program.

We have found that because we are consolidating data we have a more accurate record than we have ever had before. I want to illustrate here the various parts or areas of a business where this kind of information might well be obtained: in the medical department; wage and salary administration department; from security people, for security clearances; from the employment personnel, for personnel and aptitude test scores, as well as the significance and validation of the tests. Our educational program has separate records; our payroll departments have other types and forms of records and information; our patent people, of course, have their portion of the records; the personnel department; managers; and the individual employees themselves have knowledge of certain skills or capabilities that they possess, that may not be in use, and therefore not known in the company. All these various functions or areas in the business provide some input to the system. So, when you get all of this data from all of these different facilities, functions, and areas, including the individual employees, together in a single record, you have what we call our PDS or, Personnel Data System. I am using this slide to illustrate the fact that we do get some information from the employees. All these various company records, collected and recorded on tape, can be made useful, then, to provide output to the same areas in the business.

All of this is handled through the personnel department within our company. All requests for data come to the personnel department which in turn can authorize the production of reports, statistical analyses, or whatever is requested. I think you would recognize that it is necessary to exercise a considerable amount of control and security, because you have, obviously, some very confidential information in such a file, and it must be provided only to authorized people.

Normally, we provide certain types of records and analyses on a regular basis. Such things as experience of marketing personnel by industry. In our company we have found that our marketing people become quite expert in some industries, and that it is far too much to expect one sales representative, for example, to become expert in the telephone industry, insurance industry, the automotive manufacturing industry, the transportation industry, and so on. They tend to specialize in one or two, and it is important to us and to our sales management people to know who has capabilities in particular industries. Experience by systems type is of equal importance, because we have a considerable family of systems of data processing and computer equipment, and we can not expect our people to be masters of all of them. So, it is important to know who and where they are, and the systems types in which they have experience and knowledge.

I mentioned earlier recommendations for promotions and transfers. Once a quarter, on the basis of returns that come in from the appraisal and counseling interviews, we are able to run a register or a listing of those individuals who are judged by their managers to be ready for greater responsibility or assignment in some other area of the company. This can be, and is, very helpful to us in selecting personnel for vacancies that occur up and down the line. We have found that annually is often enough to take a look at our retirement projection.

Language ability of employees is something you never know when you are going to need. I recently had a request in Chicago. Some of our customers from Germany were visiting there and wanted to see a certain computer installation. We learned that they could not speak English. I was asked to provide one or two people from the Chicago area who were fluent in German to act as interpreters. I could not have identified these persons if we had not put such information on the skills tape. In a matter of minutes we were able to produce a list of seven or eight persons who were capable of filling that assignment.

Personnel movement and separation analyses -- I have been told, and I have sometimes felt that the letters IBM really stand for "I've been moved," and we do move a lot of people. It is pretty important for us to know what that trend is and try to exercise some kind of good sensible business control over it. We are able to keep it under control by an analysis that tells us who we are moving, how many we are moving, from where to where, and for what reasons.

We are concerned, as I'm sure all companies are, with separations, particularly with those separations which are voluntary. What kind of capabilities are we losing? What is the cost to the IBM company of losing people voluntarily? What are the reasons for separation? Can we prevent them? We will get into that problem more a little later, too.

Analysis of employee background -- we mean the kind of educational disciplines employees have. We have done quite a bit of projection and study of the kinds of educational disciplines we feel are necessary. I am speaking again in terms of our marketing organization -- we can come up with some kind of knowledge of how many people we have with engineering degress, for example; how many people with other technical or scientific disciplines; how many with non-scientific or non-technical disciplines. From a study of what we have on board already, together with projections of the mix that we think we are going to need, based on knowledge of the trends within our industry and the applications that we will be servicing, we can come up with a rather sound projection of how many engineers we are going to hire in 1967, and how many other technical people, and so on.

Built into a system of this kind is a search capability which turns out to be a most important factor. I mentioned the need for locating persons in the Chicago area who could speak fluent German. As many of you probably know, if you have had experience with computers, you do have a very great search capability. This chart illustrates that fact. Let us assume that the square indicated by the black outline represents the total population of a company, and that we have a certain position or a number of positions that we want filled. We want a certain educational level -- let's say at least a bachelor's degree in physics. We put a further limitation on the requirement: we also want an individual to be within a certain salary limitation, not above a certain figure or below a certain figure. So, the number of potential candidates is immediately narrowed. Now, we will add a third dimension: we want an individual to have had some knowledge and experience in the petroleum industry and, therefore, we narrow the potential candidates down to a very small percentage of those with the educational requirements. When you set these three specifications into a computer, in a very short period of time you can run a tape through and come up with the names of those who have a bachelor's in physics, the specified salary limitation, and experience and knowledge of the petroleum industry. We find that this is a very useful kind of thing and is used for a very high percentage of the kinds of reports and statistics that we get.

What started out, really, as an objective to get into a skills inventory has expanded into all these things that we have been talking about and will be talking about. But to focus for a moment just on the personnel and skills records themselves, we found that by getting all this kind of data onto the tape, we can generally produce a profile for each of our employees. It is used by management after we have prepared it. And, incidentally, we prepared a catalog which lists all the skills. I mentioned earlier the experience and skills in special industries, such as transportation, automotive manufacturing, chemistry, you name it; skills and capabilities in various families or systems of computers; educational background; any other skills that employees themselves knew about and perhaps we did not. We gave each of the employees a catalog that listed each and every one of those skills and asked them to check off or indicate any one of the skills that they possessed. We also ask them to tell us the last year they used that skill. For example, a man who had experience and good knowledge of our 1401 system, would check that. If he had not used that skill for the last two years, he would indicate the last year he had used it. Obviously, a man becomes obsolete rather rapidly, so it is necessary to know how current his experience or knowledge is. Now, when all of this information is put together, we run off what we call a personnel profile. Of course it identifies the individual, and gives all the usual vital statistics that are normally available in company records, and then goes into each of the skills that he has reported. We ask him to tell us the number of years he has used that skill and the last year he used it. So, it becomes an even more valuable record than it might have been otherwise.

After this type of profile was produced for each employee, it was sent out to the managers and they, in turn, asked the employees to review and bring the record up to date, correct errors that may have crept in, and delete any items that they felt they should not have reported in the first place. You might ask, "Didn't this give the employee an opportunity to boost his stock by maybe bragging a little?" Well, perhaps it did, but our managers each reviewed them with the employees, and we felt we got a pretty honest record.

We think that we have been able to improve the utilization of our personnel quite a lot by analyzing this information and having it called to management's attention. And so, we know the status of each employee, through all of the input we get in the system, how his manager appraises his performance, and what his manager feels about his promotional capabilities.

I frequently get calls -- for example, one of our branch managers in the Chicago area called the other day. He said, "I would like to know how many of our marketing people in the Chicago area have a degree in chemical engineering." We made a run on the tape and we found that the manager had three people on his own staff who had chemical engineering degrees which he did not know about. So, maybe we were able to help him just a little bit. This illustrates a type of special personnel requirement, and the ability to identify individuals, where they are, and what kind of capabilities and what kind of backgrounds they have. This has been proven over and over again to be of great value to us.

Salary administration is one of our particular functions for the midwestern regional area. I think we would find it quite impossible to do an efficient job of it if we did not have this system. In projecting our salary requirements for the future, we ask our managers to estimate the performance level of each of their employees. We have them do some planning to help us determine what our salary program small be. We give them in return a projection work sheet which is a very useful guide for each manager in administering his salary program. We follow up on what happens with the salary administration program through progress reports, that tell us where we stand in relationship to the plan; control reports, that keep it from running either behind or ahead; special attention lists, which call to management's attention any individuals who are either below the minimum or above the maximum for their position, and the reasons therefore so that corrective action may be initiated. Finally, we provide for each manager a payroll and personnel statistics report once a month that gives him the full story on all the people who are in his department or his branch. The projections -- we ask each manager to participate in projecting his salary administration program for the following year. We provide each manager with a card like this one for each of his employees. On it we have the location, the individual's name, his position, the date he was hired, the date and the amount of the last increase. Then we ask the manager to tell us whether the employee will have the same or a different position by the end of the current year. Is an increase projected for the balance of this year? Will it be promotional or merit? The date and the amount projected. Then we ask him to take a look for the coming year. Will he have an increase in '67, the type -- promotional or merit -- the month in which it is planned, what he expects the employee's performance will be. (We rate performance as A, B, C, D, and E; A, of course, being tops, and E being those who are not making it.) What position do you think this employee will have at the end of next year? You notice that we do not ask him to put down how much he would like to give him. We do that by computer. That is not a restriction on the manager.

In analyzing what has been projected by the managers, and we feel their judgment most important in this, it is important to know what this kind of a salary program is going to cost. Basically, our policy on salary administration is to be competitive with the outside world, and obviously we have to exercise financial judgment as to whether it is a salary program that is sound and one we can afford.

This is an illustration of one of the kinds of analyses one might make. We have found this one useful. By salary level, of which there are several, we want to know the number of employees who will be at that level at the beginning of the year; how many are going to stay in that level during the ensuing year; how many will move out of that level through promotions or for other reasons; how many will move into it, and then how many will be in that level at the end of the year. By taking those numbers and the average salaries at the end of the current year, the average salaries at the end of next year, the per cent change and what that represents in the way of cost increases, the top executives can review, and approve, disapprove, or adjust the scales. Then, from the card that we have asked the individual managers to prepare, we are able to provide him with a guide he can use the balance of the year, and the next year. On this card we indicate the name of the employee; the date and the amount of the last increase he received; the projected increase for the balance of the current year; the position code he has indicated he expects that employee to occupy at the end of the year; the performance that he expects that individual to achieve; the month he expects to give that employee an increase; the type of increase (promotional or merit); and then we indicate the computed amount. That amount is based on the quarter in which that employee's current salary resides. The range for a position level is divided into quarters. Then the performance rating that an employee's manager has projected for him is run through a grid in the memory of the computer to come up with the percentage of current salary as the projected amount of increase.

Before you accuse us of completely administering salary by computer, we don't. This is simply a guide that is given to the manager, and we depend upon his judgment to determine whether or not the employee should have an increase at the time scheduled, and whether it should be the amount indicated or something more or something less. This is a very helpful guide.

During the year, we are concerned with whether or not we are achieving the objectives of the planned salary program. Therefore, we get a monthly measurement of the progress and compare that with the objectives. If you think back to the report illustrated on the previous slide, you will recall we indicated the amount. If we can accumulate by position the number of employees, the current average salary versus the average salary objective, then we can determine very readily at what rate we are progressing on that salary program. Then, to give us a further control, we feel that our A or outstanding performers ought to be paid better and given larger increases than the B performers, who are just a little below them in capability, and so on down the line. The distribution at the bottom of this report shows the number of increases, the average amount of those increases, and the per cent this figure represents of the total number of employees by position. Again we feel that the A performers should have a little bigger share of the pie than the E performers, and the ones in between get their proportionate share.

Special attention lists help us to locate and track down inequities in salary administration which always happen when you depend on human beings for administration. We may have some people who we are paying higher than should be paid for the jobs they hold. There may be good reasons for it, but if they happen too frequently, we should know about it and take the necessary corrective measures. We certainly do not want people being paid under the minimum for the job they are asked to do. If we know who they are, we can find out readily and correct it. We think that if a person has been hired into a non-exempt position, and has not received an increase in the first 24 months he has been in that position, there must be something wrong, so we can look into that.

I mentioned the A performers, those who are doing an outstanding job. If they have not had an increase in about 18 months, we would like to know why, because we think at that level of performance they should be recognized in terms of increased earnings. To determine the kinds of things that you can do, use your imagination, almost anything is possible.

The last item in salary administration was this one -- the payroll and personnel statistics report. Each month each manager receives a report which lists each individual in his department or in his branch and gives the vital statistics such as date of birth, date he was employed, the number of dependents, sex and marital status, his education, his appraisal rating (A, B, C, D, or E), the monthly salary being paid, the last salary change, the amount and date, and then current monthly and yearly earnings. The managers, once a month, have to update the record of earnings information on all the persons in their department.

We feel that our appraisal and counseling program is a very important one -- one that helps our personnel develop through the counseling of their managers -- and we therefore want to see that the appraisal and counseling is done on schedule and as often as we feel it should be done, which is normally once a year. We send to each manager, a month before the appraisal is scheduled, a card to remind him that the appraisal is due within a matter of a few days. When he has completed the appraisal we ask him to fill out some information on the card and return it to our payroll department. This credits him with having completed the appraisal. For those from whom we do not receive a card, we know they are overdue and therefore delinquent. We can follow up on delinquent appraisals and see that they are completed. We ask the managers to indicate on the card whether they feel the employee is promotable at this time, or reassignable to some other area or some other type of job, and his recommendations for either promotion or reassignment. It is from this source that we get the quarterly listing of promotion and reassignment which I mentioned earlier. Special manpower analyses can be just about anything that any one can ask for.

Personnel movement and separation records are of vital interest and concern to us. If we are losing people through voluntary resignation, we obviously lose a large investment. We all know turn-over is costly. By analyzing the skills and capabilities and utilization of individuals who leave us voluntarily, we have been able to learn where we have been making mistakes, and by taking advantage of what we learn and correcting those mistakes, we have been able to reduce dramatically the voluntary separations.

Searches for all kinds of people, all kinds of skills, to fill all kinds of requirements are very easy to do. We find that we can analyze and therefore adjust our recruiting efforts, depending upon what the educational mix is of those on board, projected against those we think we are going to need.

We do have management development and management training programs. When you have several hundred managers, it is important to know which ones have had a particular type of management development training. We can then schedule those who may not have had it, or have had less than we think they ought to have had.

With such things as the Vietnam situation, the military exposure becomes more and more important and from the skills file we can determine which of our employees are most likely to be called into service either as reserves or as draftees.

This chart brings it all together. The personnel data system helps all of our management in its manpower utilization, the deployment of human assets, if you will. It has been a tremendous help in our salary administration program.

We have been able to answer a lot of the requirements and fulfill many of the open positions through the record of skills. In appraisal, scheduling and control, we have found, the per cent of completions of appraisals has jumped dramatically, much higher than it was before. We have been able to fulfill all kinds of requests for all kinds of special capabilities and skills that we may have never known about without such a record.

Now, I think it would be most appropriate to end up by taking a look into the future, a look at some of the things we anticipate doing as an expansion of what we have already accomplished. Since a large marketing organization, or even a small one, means that people are away from the office most of the time, working outside of your own environment, it's pretty hard to know what they do. By asking them to give us an estimate of what proportion of their time they spend in particular activities, we can learn more about the requirements on their time, and perhaps we can do a better job of planning, training, and recruiting.

Benefits programs, of course, are with all of us. There are always demands to continue them, to improve them and to enlarge them. It is pretty important to know what changes or expansions can benefit the program, such as changes in retirement, improvements in hospitalization, major medical, and other things. It is difficult to evaluate them, and judge whether a particular change is something we can afford to do, unless we have a means of knowing what it is going to cost. Through the facilities not only of the skills records, but also the other records that are collateral with it, it is possible to determine what these proposals will mean, how many people will be affected, what it will cost, and so on.

The personnel history card is something that most every company maintains. We do it in hard copy form. It simply records all changes that happen to an individual from the time of his employment to the time he leaves. We do this pretty much manually. This will go onto the skills tape and we can discontinue the manual effort that goes into it. Personnel research -- we do quite a bit of this, as do many other companies. We are going to get into more and more of it and we will be able to do, I'm sure, a better job of it.

We do use aptitude tests for employment purposes. It is important to know whether or not the aptitude tests are really worth the cost, time, and effort. By correlating the record of what happens to the people with the results shown on the aptitude tests, we can readily validate the tests and determine whether they are still good, or should be changed or adjusted or eliminated entirely.

We are looking forward to the time when we may have real time and direct access data. Those of you who were watching CBS on election night saw the kind of a thing I refer to, a visual tube, like a television tube, which displays election results a number of times during the course of the evening. We do have that equipment now. Although we are not yet using it on this application, we look forward to that possibility in another year or two. I think it would be pretty nice to be able to push a couple of keys and have a visual tube instantly display the name of the man who could speak German.

Thank you very much ladies and gentlemen, and I will be glad to answer any questions later.

PROBLEMS AND GOALS OF A UNIVERSITY HUMAN RESOURCES INSTITUTE

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The Nation's Manpower Revolution -- resulting in the passage of four major pieces of human resources legislation during the past half-decade -- has cloaked the academic labor economist in a new-found respectability. Among his academic colleagues, the labor-manpower-human resources economist has not yet moved anywhere near the head of the pecking order, but he has been able to advance beyond the foot of the line.

While his colleagues were able to prosper in the aura of econometrics, mathematical economics, and model-building -- and to communicate almost wholly among themselves -- the industrial relations-oriented labor economist was able to do little more than profess an interest in labor problems, in trade unionism, in labor legislation, and in the arbitration of labor disputes. (It should be noted, of course, that arbitration frequently became a lucrative source of income to compensate for the relatively low value the academic community placed on his services.)

The industrial relations-oriented labor economist came to be relegated to a position of second-class citizenship among his academic colleagues, and, frequently, he was dismissed as an historian, a sociologist, or -- under the worst of conditions -- as an "institutionalist." He may have argued that sophisticated analyses existed in the works of Commons, Perlman, and Witte. But he was never quite able to achieve the respectability which was associated with being carried along in the mainstream of economic theory.

The new era, however, is upon us. The new labor economist is of a different breed. Long before his colleagues were willing to admit that they were carefully assuming away the difficult problems which failed to conform to their mechanical models, the new labor economist had anticipated the growing importance to economics of the behavioral sciences.

Publication of the Department of Labor's Manpower: Challenge of the Sixties and passage of the Manpower Act of 1962 catapulted the labor economist into a new role, and he became a manpower economist. With the publication of the first Manpower Report of the President -- in which the late President Kennedy identified unemployment as the nation's number one economic problem -- the manpower economist was given a formal claim to respectability. For the first time, wide currency was to be given to manpower problems and policies. For the first time, the manpower economist had at his disposal a compendium of data, which, previously, were obtainable only by consulting the publications of a number of agencies within the Department of Labor and which, too frequently, were available on a "for administrative use only" basis. His fortunes were to improve dramatically, for the first Manpower Report was recognized, almost immediately, as the beginning of a series whose importance, quality, and utility would approach those of the Economic Report of the President.

But the manpower economist's new estate was not a protected one. Unemployment remained at progressively higher levels after each of the three recessions during the 1950's and the early 1960's and gave rise to the structural transformation-inadequate aggregate demand controversy. His golden opportunity to focus attention on the operation of the labor market -- I should say job market -- was almost snatched away by the non-manpower economists who involved themselves in that controversy. And, as the national economy achieved an increasingly high level of employment, his pleas that structural changes in the labor force, in employment opportunity, and in unemployment continued to merit serious investigation fell on academic ears which became increasingly deaf. It was at this juncture -- in the early days of MDTA support of academic research -- that the manpower economist was to engage in a most effective exploitation of his behavioral bent and to argue, convincingly, that labor force, employment, and unemployment research, by its very nature, is multi-disciplinary. It was at this point, then, that the labor economist, who had become a manpower economist, became a human resources economist.

The academic human resources economist's recognition of the need for an interdisciplinary approach, in large measure, is a product of his search for a technique which would lead to understanding of forces and problems not attacked directly in conventional economic analysis. And the stimulus he offered to the interchange of ideas on human resources among economists, sociologists, psychologists, and political scientists may very well stand as his major contribution up to this point. The assertion that communication between members of any two of these disciplines is, at best, difficult tends to appear less and less frequently, as that interchange continues. Much of the credit for the growth in the frequency and depth of interdisciplinary exchange, therefore, goes to the academic labor economist who, in his own right, became a manpower economist and then a human resources economist.

But equal credit must be assigned to the Department of Labor's Office of Manpower Policy, Evaluation and Research, which came into being following passage of the Manpower Act of 1962. Title I of the Act directs the Secretary of Labor to arrange, through grants or contracts, for the conduct of such research and investigations as gives promise of furthering the objectives of the act; and OMPER administers the grants and contract program.

At the present time, OMPER administers:

(1) grants to support doctoral dissertation research in manpower-human resources;

(2) grants, not exceeding $10,000 to support exploratory research;

(3) contracts with qualified research specialists and organizations who may submit proposals for manpower research projects; and

(4) manpower research institutional grants designed to enable academic institutions to plan and conduct long-term research programs with unified goals.

The program of research grants and contracts must, of course, face the test of relevancy to the objectives of the Manpower Act -- that is, of its impact on programs and policies. But this does not restrict the sponsored research solely to that which is directly policy-oriented. Specifically, it should be noted that OMPER has encouraged research designed to extend frontiers of knowledge, as well as research designed to support experimental, developmental, demonstration, and pilot projects.

In a paper he presented at the September, 1966, meeting of the Missouri Economics Association, Dr. Howard Rosen -- OMPER's Assistant Director for Manpower Research -- described clearly that office's interest in basic research. Rosen points out, in that paper, that OMPER has supported research designed to improve methodologies used to determine manpower needs; to provide better information about the employment problems of Negroes; to throw light on how the job-market operates; and to develop information on the impact of technological change on job content and employment. Support has been given, also, to studies of counseling and guidance, economic growth, factors affecting the mobility of the labor force, and the attitudes and motivation of workers toward training and retraining.

Most significant from my point of view is OMPER's concerted effort to attract more researchers to a study of human resources. The fact that the 34 doctoral dissertation grants and 31 grants for exploratory research in 1966 were distributed among individuals working in economics, sociology, psychology, education, industrial relations, business administration and other fields is most encouraging. Even more encouraging to the human resources economist is the following statement made by Rosen in that paper:

> The more we have delved into manpower problems the more we have become convinced that we need help and assistance from social scientists in all disciplines. We have increasingly recognized and appreciated the contributions of psychologists to motivational problems, of sociologists to organizational problems and even political scientists to the problems of securing trade union leaders to accept research in the field of apprenticeship.

But I must speak more specifically to my topic: "Problems and Goals of a University Human Resources Institute." It would seem to me that in writing a paper on this topic, human resources economists would fall into two roughly defined camps. Members of one camp would argue that a university human resources institute should be a community of researchers, the members of which are concerned primarily with pure research. Members of the other camp would argue that such an institute should focus primarily on experimental, demonstration, and pilot projects and that the research function should be subservient to the action function. Thus, while the members of the first group are concerned, primarily, with extension of the frontiers of knowledge, members of the second group experience greater satisfaction in the application of existing knowledge.

I should like to state that I have been improperly billed in the program. At the University of Houston, we do have an Institute of Human Resources. But I am not, formally, a member of its staff. I did participate in the writing of a proposal for the establishment of the University of Houston Human Resources Institute last May, and I endorse fully the goals and functions of the Institute, whose director, J. Earl Williams, joined our faculty last July.

My proper designation, however, is professor of economics; and my interests lie in teaching and in pure research. Thus, I am a member of that camp which argues that a human resources institute should be a community of researchers.

Before presenting my interpretation of a human resources institute as a community of researchers, I want to attempt to describe the goals of a human resources institute, which focuses primarily upon experimental, demonstration, and pilot projects. Such an institute operates in the following major functional areas: technical assistance; developmental; information; and research.

In its technical assistance function, such an institute develops a pool of manpower-human resources consultants and a program for training members of faculties of universities and colleges throughout an appropriate region for continued additions to that pool. These consultants render services to funding agencies in evaluating, inspecting, and coordinating programs existing in the region, and they participate in the development of model programs. For example, assistance can be rendered in identifying training needs and resources, in designing effective training plans and programs, and in developing criteria for use in program evaluation. Such a program of assistance, of course, results in increasing the supply of persons who are qualified to administer and operate action programs in the area of human resources. In addition, it makes possible periodic recommendations to funding agencies of areas in which action is needed.

In its developmental role, such an institute assists agencies in developing training programs and, on a larger scale, develops curricula designed to result in production by the educational establishment of persons qualified to administer and operate human resources programs. Performance of this role results in short-courses and in-service training programs, on the one hand, and in programs of study for college students on the other. Other aspects of the developmental role might include:

1. training sessions emphasizing human resources problems and programs designed to result in increased familiarity with the problems and programs on the part of the faculties of smaller colleges and universities, employees of state employment services, and teachers of vocational education;

2. human resources lectures for presentation in small colleges to stimulate the interest of students in human resource problems;

3. development of a curriculum for out-service training for state employment service employees; and

4. seminars bringing together national experts in the human resources field.

In its information function, such an institute becomes a depository and publisher of information relating to: pools of consultants qualified for participation in human resources programs; legislation; progress and problems in specific programs; literacy devices and test instruments; and job opportunities for persons with training in human resource programs.

Finally, in its research function, such an institute engages in a program of on-going research to support the technical assistance, developmental, and information functions. Research studies undertaken are directed toward the finding of solutions to specific, practical programs and policy problems.

An institute of human resources with such an orientation renders a most valuable service to the community at large in that its resources are concentrated, primarily, on action here and now. It provides solutions to problems, relieves local, state, and federal agencies of some of the pressures they face as a result of being unable to find an adequate number of workers adequately trained to administer programs.

Many of you may recognize the orientation of such a human resources institute as one which is similar to that of agencies existing at many of our state universities -- particularly at the universities which have a land-grant history. We see in this orientation some of the characteristics of the Agricultural Extension Service, of adult education, and of labor education centers. But we see little that is interdisciplinary or behavioral, and we see little that will permit the human resources economist to advance nearer the head of the academic economists' pecking order. We see a means of improving the facility with which local employment service office workers administer programs. But we see little, for example, in the development of new concepts, in the challenging of existing analyses, or in cost-benefit analysis.

From my perspective -- that of the human resources economist who argues that a human resources institute should be a community of researchers -- I find the problems and goals of a university human resources institute to be almost wholly those of pure academic research -- extension of the frontiers of knowledge. Let me emphasize that I consider it incumbent upon the researcher to point his research toward the solution of practical problems and toward the influencing of public policy. Yet, I would argue that the primary goal of a university human resources institute should be analysis -- not development or administration -- of policies or programs. Most important, I think, is analysis of human resource problems inherent in the changing structure of the labor force, employment, and unemployment. Such analysis must incorporate the efforts of social scientists in all disciplines, if it is to be valid. It must produce new concepts, new solutions to existing problems, and understanding of new problems. If it is of this character, such analysis will result in legislation in new policies, and in new programs -- the administration of which is best left to the practitioners who possess the required expertise. No matter how multidisciplinary the analysis becomes -- and no matter how dramatic the extension of the frontiers of knowledge -- little value is to be attached to the effort, if it fails to influence policies and programs.

I turn, again, to Howard Rosen's paper. He argues that "the results of social science research can be used to modify concepts and attitudes and create an enlightened public opinion," and that "social scientists can provide the knowledge for successfully implementing policies and the scientific basis for the understanding and regulation of social processes." It would appear to me that creating an enlightened public opinion and providing the knowledge for successfully implementing policies, as well as providing the scientific basis for the understanding and regulation of social processes, defines the role of the academic social scientist researcher in a university human resources institute.

In fulfilling that role the individual academic human resources economist will discover that the character of human resource problems requires a far greater scope of knowledge than was made available to him in his specialized training. He will find that the concepts developed by, and the analyses employed by, his colleagues in the other social sciences fill the gaps in his own training. As he becomes immersed in interdisciplinary research -- and expands his perspective he will become increasingly aware of the deficiencies imposed upon the students he is training in specialized programs. At that point, he will face the need to ask whether future researchers in the problems of human resources can be adequately trained within the framework of existing academic disciplines or must have access to a new framework of formal interdisciplinary training.

It would seem clear that the members of neither camp maintain a wholly-tenable position. Neither a program in which research is subservient to action nor one from which all action is excluded can be expected to produce a truly effective institute of human resources. From my perspective, choice between the two extremes must be made. A university -- that is, a community of scholars -- will invest its resources in extending the frontiers of knowledge and will leave to the practitioners the development and implementation of programs.

In the contemporary society, however, a choice between the extremes is not possible. In fact, there exists but one route which a university human resources institute can follow -- if it is to be effective in enlightening public opinion and in providing the knowledge for successfully implementing policy.

In following that route, a university institute of human resources must:

1. extend the frontiers of knowledge through interdisciplinary research and, simultaneously, develop future researchers who are adequately trained -- either within the framework of existing academic disciplines or within a new framework of formal interdisciplinary training;

2. develop a program of on-going research which -- within an interdisciplinary framework -- incorporates extensions of the frontiers of knowledge into studies of current problems and programs; and

3. through effective communication, contribute to implementation of existing policies and programs and influence the continued formulation of an active manpower policy fully responsive to the nation's manpower revolution.

SKILL DEVELOPMENT AMONG THE UNDERPRIVILEGED

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Thank you Mr. Thuma, and good morning ladies and gentlemen. I am not sure how this talk is going to come out, because I will be hearing some of it for the first time myself. Mr. Thuma mentioned that I am with Community Action Against Poverty, and that I will tell you a little of what we are doing in Indianapolis. To be more specific, I am in charge of employment and training programs -- helping people find jobs, referring them to the proper place for services, and similar activities.

I would like to approach our topic, "Skill Development Among the Underprivileged," by outlining what we are doing in the CAAP program generally, and then examine the philosophy of the Employment Opportunities Unit as well as some of the techniques we have found to be effective at the grass roots level. Underlying all the specific programs is the basic goal of the Office of Economic Opportunity, namely, to break the poverty cycle. This goal, as we shall see, is easier to state than it is to implement.

My experience with the Marion County Department of Public Welfare was very revealing, particularly when I was working with ADC mothers. After I got started, I found that many of the ADC mothers were the children of parents who had been on ADC. Their children, in turn, seemed destined to be on ADC. We were fortunate, however, to have a director with some modern ideas, who was willing to take a chance on new types of programs. We set up an intensive unit where young mothers, who were staying at home with their mothers, could come in and be counseled. Most of them had two or three years of high school, had some potential, but due to circumstances they were not able to use this potential. We set up training programs, especially for nurses aids, practical nursing, and culinary arts. A large number of these young women now are self-supporting. There is still an on-going program of the State Department of Welfare for persons on ADC, or other welfare programs, to be trained for productive jobs. I think this concept leads directly into the economic opportunity program.

In Indianapolis, there are a variety of services that are based in the neighborhoods. We have ten neighborhood multiple service centers scattered throughout the center city, where low-income population is most heavily concentrated. We have neighborhood coordinators and three so-called neighborhood workers, persons who live in the neighborhood and develop block clubs, interest clubs, and help the people to help themselves. Many persons who live in these neighborhoods do not know the services that are available, so our neighborhood workers carry the message to them. One of the neighborhood workers is assigned to me in the Employment Opportunities Unit to see if people need jobs or training, or if they can take advantage of any part of the manpower program. These workers report directly to me, and I keep them informed about anything that could be utilized in the neighborhood.

We have a Head Start Program that involves about 1400 children between ages three and four. Many people ask: "How long will it take to get results with children so young"? Well, we get immediate results, because we have social workers who can get to the parents through the children. If you can get the children involved in the program, then the parents will want to know where Johnny is going, why he has to go to school, and what the advantages are. So we try to impress upon the parents the importance of education, and how they can help their children get ready for regular school. Significantly, many of the neighborhood workers have returned to school themselves. As they talk about education and its values, they begin to see that they too need more skills. We do get some immediate results, even though the children are still in Head Start.

We have a legal service organization to assist individuals who do not know their rights; who do not know about signing contracts; who do not know when they are liable. Many times they get into a bind because they do not know where to turn. They can get locked up, and they cannot get out. We have lawyers in the neighborhood centers who try to counsel these individuals before they get so involved and bogged down in the legal structure that they cannot get out.

We also have a human resources development section, operating through the County Extension Agent, which helps families to utilize better their money. Courses on consumer education teach them how to buy, how to save money by buying in bulk, and how to use commodities that are cheaper. They also learn nutrition and something about sewing and home management.

Sometimes it is argued that a person is only poor because he does not have any get-up-and-drive. This may sometimes be true, but actually there is more than one type of poor people. Those who are poor in terms of income, but have dignity, we call the working-poor class because they maintain a good home, try to keep the children clean, and do other things that seem necessary. There is another class of persons, however, who have reached the point of no return. They have given up hope of ever amounting to anything, and they feel, in fact, that society is against them. They either turn to crime or in other ways offend against the mores of society. These people are more difficult to deal with because it is very hard to relate to them, and many times they really think you are interfering. For this group we have in-service training programs. We bring in people from the various agencies with which we cooperate and try to set up some techniques that can be used to reach all the people in a neighborhood. One of the things we have found, since we began operations about a year ago, is that if people really want to do something, we are able to help them. They can be moved into the mainstream. There are many, many others, however, who are reluctant to communicate with us. They do not want to participate in the program, and we have a difficult task convincing them of the importance of becoming a part of American society.

The main functions of the Employment Opportunities Section are to discover, recruit, counsel, motivate, and place in jobs the hard core unemployed of all ages residing in low income and disadvantaged areas. These are people who have not been in the mainstream of the labor force and lack the know-how and techniques of job finding. Many sophisticated persons know where to seek a job. They know how to fill out an application. But individuals who are unemployed, and who have not worked for some time, do not have these skills. They are very apprehensive of going into a big office for an interview. Many times they will get to the place, and then return home without ever being interviewed. They are very apprehensive. Since these people are not able to seek employment through regular channels, we try to get them to come into our neighborhood offices where one of our workers can talk with them. We try to bring them to the point where we can help them, where they will respond to our suggestions. Many of them have never been registered for work at the Indiana Employment Service. Those who are registered either have a negative relationship, or have a negative attitude toward the practices and procedures involved. There is just too much red tape for them to cope with. So, rather than be embarassed, they simply will not go there. Due to low educational levels they have great difficulty in their interviews with placement officers, and they are incapable of selling themselves. They may know a job very well, but they need help reaching the point where they can sell themselves, get the job, and get a chance to compete in the open market.

We have in-service training for our job interviewers. We want them to make a realistic appraisal of the types of employment that are available, and also to give the applicants an opportunity to express themselves about what they would like to do. We all know people who would like to be president of a bank, and we also know that most of them do not have the potential. We let these people talk, and by letting them talk, we find out something about them. We try to make a realistic appraisal and show them where they are deficient, either educationally, or because their health might be against them for certain types of jobs. We give in-depth vocational counseling to all of the people who come in.

After we have placed them, one of the most important aspects of our job is to maintain contact with them. We try to find out how they are getting along on the job. We do not let them go to work and just flounder around -- get in trouble with the foreman or with the people with whom they are working. If they get fired, we have to start all over again. We follow their progress, and usually we find it very encouraging because we can help people to stay on the job, and also help them develop respect for the job as well as for their co-workers.

I talked with Mr. Thuma about some of the things we are finding out about techniques for motivating people who have never worked. We try to find each individual's potential. Many times persons from disadvantaged groups have very poor verbal skills. It is not easy to find something they like to talk about. Many of us talk about our pet projects, and we can talk about them all day long. But when talking to someone from a slightly different background, it is essential to concentrate on his concerns and interests. If the person has children, he will probably find it easy to talk about them. If he has been in sports, or music, he will talk about these. But you have to ask him, and we encourage our interviewers to go beyond the application, to go to the person himself. We want the interviewers to find out where the person went to junior high school, where he has lived, what kind of interests he has. If we can get them talking, then we can find out where their high interest is, where their low interest is, and whether they can work in groups or prefer doing things on an individual basis. This helps us plan for placement. We would not put a person who has trouble working with others into a position where he would have daily contact with 50 or 60 people. He would be unhappy all day, and possibly he would not stay on the job.

We also look for resources within the person -- such as sensory factors. How is his eyesight and hearing? Does he have adequate hand dexterity? The Indiana Employment Service uses a dexterity test which I could not pass, myself. Usually, if a man has played ball -- basketball, baseball, football -- or driven a car, I would put him up against anyone who has passed the routine dexterity tests. Persons who play musical instruments also have good dexterity. Girls who type, if they have been in typing class more than two semesters, must have some dexterity. They may not know it, but this skill can be adapted to other types of jobs. We look for these kinds of things.

We talk about familiar things to get the person talking, and we try to follow up. We try to give a person more than one referral. Many times our interviewers know that there is a suitable opening at a particular place, so they are inclined to give the applicant only one referral. This is good and we hope the person gets the job. But we like to give the person an opportunity to decide whether he would rather work at Western Electric or at Ayres. Let him make a decision for himself. We try to get these people to develop to a point where they can make some decisions for themselves; elevate them to a point where they can compete with others for jobs, or anything else that is available.

We have to use different approaches to help the person break out of the cycle of poverty. I should mention that poverty is measurable not only in terms of dollars but also in terms of education. The poor have not been exposed to enough; their schools have been lacking, and they have not had the chance to take courses that would give them a saleable skill. We try to refer them to short-term classes which build on the training they have had, so they can develop a saleable skill in the shortest possible time.

I feel that many of the courses we establish are too long. If a person has a family, or other obligations, he cannot afford to go to school 26 weeks before he starts working. We try to work out a combination, much like the work-study plan in some colleges, where a person is on a job and goes to school part time. This system requires a real selling job. Many persons who have not thought about education, and how it fits into their program, have to be sold on the idea. There is strong competition from the street, to the extent that there are many jobs that do not require education. These "jobs" may be unlawful, but they still make money. You have competition from people who say: "Well, I can do such and such a thing and get by and make it." It is our objective to point up the good things in the world: how a person, for example, can be an upstanding citizen and set a good example for his children, instead of doing things that are against the law.

Many of you have heard that there is great disintegration among minority group families, and disadvantaged persons, both white and colored. As much as possible, we try to restructure the family, and put people back together in their proper places. There is no reason for a man to leave his family just because he cannot find a job that allows him enough money to take care of them properly. It is our responsibility to try to find a job that will enable a man with five children to care for them properly, and if the children are small, enable the mother to stay home. Later in life she may have enough free time to go back to school and seek gainful employment.

We try to emphasize all of these facts with our interviewers in such a way that they can go into the neighborhood to do their interviewing, and still feel free to use the further services of our office. However, one of the advantages we have over some of the other placement agencies is that we use people from the neighborhoods. Our neighborhood areas are about ten blocks square, so interviewers get to know the people quite well. If the interviewers are introduced to the neighborhood leader, who knows the people, then they will not get what is known as a "snow job." If you know someone has bad habits, then you are prepared to deal with them. If they are not punctual and never have been, then the interviewer can tell them, "Well, we could help you, but are you going to be there every day? Are you going to be on time?" This approach helps us get the person straightened out quicker than if the interviewer did not know him at all. Many times, in some of our more sophisticated employment offices, the interviewer makes bad referrals because a guy puts on a clean shirt and does a good job of selling himself. We have the advantage of having a person in the field who either knows the job seeker personally, or knows someone who can give us the scoop right away. You do not have to request a letter of reference, these people can give the reference right then and there.

It is to our advantage to have people in the neighborhoods who know the youngsters, the older people, and what the home situation is. A girl will come in and say, "No, I don't have anybody at home to take care of. I can take a job right today." If you know, personally, that she has two kids at home, and cannot go to work, then a day care plan can be arranged for the children. This is what we call supportive service. Many people look as if they are ready to go to work, but they are not. They may not be physically able to do eight hours labor, especially if they have not worked for six months or a year. It is a great task to get up at six o'clock in the morning if you have been sleeping til noon! If this is your pattern, then you are not going to make it every day. You may not make it that first day! We guard against referring people too soon. This describes the function of our section on pre-employment counseling. Get ready, get the person ready to go to work. It may take two or three days, sometimes it may take a month before a person is ready to go to work. It may take that long before he is ready to be referred to the Indiana Employment Service for testing or for placement.

One other program that CAAP sponsors, which I have not mentioned, is the Neighborhood Youth Corps. We have two such programs running simultaneously in Indianapolis. One is the in-school program, which helps youngsters between 16 and 21 to work about 15 hours a week while they are going to school. This program has been very helpful. We had about 300 youngsters last year in this program. They can be assigned to any non-profit agency to perform various jobs. It has been very helpful particularly where there are several kids in the family, and the parents cannot provide clothing, or the little necessities youngsters like to have. The 16 year old likes to go out sometime, and if there is no money, he is going to get it someplace.

We also have an out-of-school program for drop-outs. To qualify, they must be out of school at least six months and be looking for a job. These youngsters can work 25 hours a week, which we feel is a little light, because many of them may find jobs in private industry working 40 hours a week. However, the variety of jobs we have to offer will permit the boys to go into some skilled job in the building trades. Girls can work in offices -- to get experience as secretaries or clerks. The boys are employed as helpers and then go into the pre-apprenticeship program at Weir-Cook, or at the Mallory Building. Our selling point is the ability to place youngsters in a program that will have a future rather than a deadend.

These are the things our employment section is trying to do. We try to coordinate all the other programs that are available in the city so that the people in the neighborhood, our neighborhood workers, can tell the persons with whom they deal exactly what is going on, and what they can take advantage of. It seems to be working very well. One thing the CAAP agency has done is to make people aware of available opportunities. For example, the Indianapolis Job Fair was a very significant event. There was great apprehension about whether anyone would go to the Job Fair. Actually, over a hundred employers set up booths, and the first day more than ten thousand people attended. The next day it rained, and there was some feeling that attendance would decline, but 14,000 came anyway. This morning's Star reports that of the 25,000 people attending, 550 got jobs. They have the names and addresses of the other people, who will now be channeled through our Community Action Agency, Flanner House, and other participating social agencies.

Many times we hear people observe that the poor are poor simply because they do not want to do any better. I do not believe this is true. The more I deal with these people the more I feel that they are not in a position similar to ours simply because nobody has helped them. Nobody has listened to them long enough. We try to keep our phones open all day long. We want somebody covering the phone so that regardless of the kind of call that comes in, the caller will be able to get some kind of an answer. Some businesses do not operate this way, but we feel that if we are going to help the disadvantaged, we must listen to their side of the story. There are many factors that put the people in the position they are in. Any time they want some help, I feel that our organization should be there to assist them -- to refer them to a proper agency or do what we can to rectify the difficulty ourselves.

As I have been speaking of the various aspects of our program, questions may have come to your mind. You may want specific examples, or you may need information related to your own work. I would welcome any questions from the floor at this time.

Thank you very much, ladies and gentlemen.

INDUSTRY'S PARTICIPATION IN THE NATION'S EDUCATION PROGRAM

Robert J. Hadden
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Camp Atterbury, Indiana

The past two years, 1965-66, have seen the beginning of a new industry in the United States -- the education industry.

It is apparent that education will be one of the new dynamics of our national economy, that learning is one of our new growth industries. During these past two years, many large, diversified corporations with their bases in communications or electronics have entered the field of education with great vigor.

Let us review the extent of the current corporate-industrial participation in the education and training field; the areas of major interest of these industrial participants; the general reasoning behind the entry of many industrial giants into the field; and the probable impact on the education field and the manpower resources of our nation.

The current industrial activity in the educational field certainly points up the fact that 1965-66 is when American business discovered education.

Some huge corporations were merged for the purpose of entering the field; others formed joint ventures; some have formed subsidiaries for the purpose of providing a "systems approach" to education and still others have bought up comparatively smaller, single-line companies which traditionally supplied the education market.

In early 1966, Random House, Inc. was acquired by RCA in a merger of two of the largest companies in their respective fields, publishing and electronics. Also in early 1966, General Electric Company and Time, Inc.

entered into a joint venture called General Learning Corporation, formed to create and market educational materials, systems and services geared to the "new era" in education.

Raytheon Company over the past two years has acquired Dage-Bell Corporation which manufactures closed circuit television and language and learning systems; Edex Corporation, which develops and manufactures multimedia teaching and student responders and response systems; and D. C. Heath, publishers of textbooks, classroom films and audio and video tapes used in classroom instruction.

Other recent moves by big companies include:

International Business Machines purchased Science Research Associates of Chicago which specializes in programed instruction, science training kits and electronic test-grading techniques.

Xerox has recently purchased two publishing firms, Wesleyan University Press and American Education Publications; and Basic Systems, Inc. which builds teaching machines and other teaching equipment.

In my own corporation, Westinghouse, a subsidiary has been formed to bring to bear the diversified talents that already exist in the organization upon problems in the education field. The program management and technical training capabilities of our Systems Operations Division in Baltimore have been combined with the research capabilities of the Behavioral Technology Department of our Research Labs and audio-visual capability of the Westinghouse Broadcasting Company in this new organization.

The major areas of interest of these newcomers to the education field are generally threefold:

1. The development of a wide range of instructional materials and

equipment -- some conventional, such as books, periodicals, and motion pictures -- others new, such as video tapes, educational games, electronic learning devices, and information storage-and-retrieval units to aid the educator in achieving new methods of instruction.

2. Research and study of new techniques and methodology for the vocational skill training of previously unemployable people. Such research emphasizes the evaluation of unique methods of motivation of the trainee as well as studies of new instructional methods and equipment.

3. Systems management of public sponsored training programs including those at the federal and state level such as Job Corps, VISTA, MDTA, etc.

Since my own corporation, Westinghouse, is presently deeply committed to participation in the Job Corps program here in Indiana at Camp Atterbury, I would like to review the reasons for our interest, as well as that of other major industry, in the program and the unique educational system that is involved.

As many of you know, the Job Corps program is established to provide training for out-of-school, out-of-work, young men and women in the 16-21 year old age group. It has two major objectives: to provide vocational training for these "unemployables" and, most importantly, to attain the necessary social attitude change to allow the trainee to find and hold a job upon completion of the program.

Major corporate interest in a program such as Job Corps is by no means limited to Westinghouse. Of the 11 Men's Urban Centers in operation in Job Corps today, ten are operated by major industrial concerns. Seven of the nine Urban Training Centers for Women are managed by industrial organizations. REC, IBM, ITT Federal, U.S. Industries, Litton, General Electric, Xerox, Burroughs and Thiokol Chemical are among the firms presently involved in the program.

The education system at Atterbury, like those at the other Job Corps Centers, is unique. The curriculum was developed from scratch and the teaching techniques and methodology are quite innovative. It is quite a challenge to motivate and train this group of young men who are "dropouts" from our standard education system.

The average Corpsman comes to us with no marketable skill and a reading level of the fifth grade. The usual educational techniques of lecture and classroom are unusable since, in many cases, they are part of the reason the Corpsman left school in the first place. Instead, small group instruction, much of it individualized, is used. In addition, an incentive system, some people call it "the carrot-before-the-nose" technique, is used. For example, the Corpsmen in electronic assembly were told that when they learned to read the instruction manuals, they would be given the parts to assemble a small radio which they can keep if it worked.

To improve the reading skills "Dick and Jane" readers won't do. They are "kid stuff" to our average 18 year old Corpsman and he wants no part of it. So new textbooks were developed with the reading keyed to the vocational area in which the Corpsman was receiving his training.

New techniques in programed learning and new electronic instructional aids were developed and are used with great success in the program.

After a slow start, the program is beginning to show moderate successes. To date over 12,000 men and women have been graduated from Job Corps. At Atterbury, we have graduated more than 750 with about 50 percent finding jobs in industry, about 15 percent re-entering the public school system and about 35 percent entering the armed forces. Remember that these were young men who not only were below the entry level for jobs in industry, but also below the minimum level for military service.

I have been asked many times why major industry, including Westinghouse, is involved in the Job Corps program. Let me answer in three ways:

1. Since the free enterprise system of our country is based on the individual, all individuals must be developed to a greater potential if we are to get the best from our system. Further, as a principle element in the free enterprise system, industry should take an even greater part in this development process. The problems of the young men and women in our country who are "unemployable" due to a lack of skill will not go away. We cannot bury them in the slums of our cities or scatter them over the countryside. Industry, with it's depth of talent and resources, has the ability to manage effectively and economically the many elements of a large complex training program such as Job Corps.

2. Most of industry is already heaving involved in the training business within the individual corporate boundaries. Westinghouse, for example, trains more than 5,000 of its employees per year. This has ranged from on-the-job training, re-training in new skills, work-while-learning and many forms of educational aid programs. These training activities have been directed toward upgrading and reorienting the skills of our employees to keep pace with the rapidly changing technical content and complexity of our products. To make our training programs as effective as possible, we brought together professional teachers and specialists from outside, and coupled them with our engineering, production, marketing and management personnel to develop training aids, equipment and techniques which have resulted in better training at less cost. We have found that many of our innovations were applicable on a broader basis than our own internal needs.

Consequently, we find an ability to apply a great deal of our corporate talents to the Job Corps program.

3. Through the participation in the Job Corps program, industry sees the ability to learn the techniques of motivating and training a new segment of our population. As these techniques are acquired, they can be fed back into the corporations to assist in the development of new training programs. Such programs will allow industry to begin training this segment of the population on its own at a local level to help fill the gaps in a sometimes dwindling pool of labor talent primarily composed of high school graduates. In three to five years, many of the firms now participating in the Job Corps program will begin a similar program of their own using the techniques learned from Job Corps.

The new industrial participants in the educational field are already deeply involved with all levels of American education. Some examples are:

New electronic instructional devices, developed by General Learning, Inc., are producing excellent results in some primary school systems in New York.

An electronic data retrieval system using five to ten minute concept films that supplement classroom instruction has been developed for a secondary school system in Illinois by Ampex and Encyclopedia Brittanica films. The concept films are presented on closed circuit TV to an individual student who has dialed the Instructional Resource Center and gers the data automatically.

New audio and visual training aids developed by Westinghouse are in use by Peace Corps volunteers to teach English as a second language to the citizens of Iran and Micronesia.

Industry's entry into the field, which some people still call "the three R's", has been prompted by the fact that it sees an opportunity to do so, that the profits look promising, and that the resources are available to deal with the technological change that is affecting all society, including education.

Perhaps the reasoning was best stated in a joint announcement by President Borch of GE and President Linen of Time, Inc. at the time General Learning Inc. was formed.

> Our objective will be to help educators achieve new methods of instruction. One hope is that we can make some contribution toward helping educators and government solve the problems of the school drop-out and the chronically unemployable citizens who have become lost in an environment of high job availability and widespread affluence. Education and training are essential keys to this country's expansion. Industry must assist the American education system to meet today's urgencies and prepare for the staggering challenges of the next decade and beyond.

The past two years are only a beginning. If and when our national defense requirements are diminished, or if the American public becomes disenchanted with outer space, the full force of American industry will of necessity and in pursuit of diversification be directed toward the knowledge industry, the fastest growing peacetime sector of our economy. As this happens, both education and industry will face a great challenge in steering the application of industry's brains and resources into the most constructive channels.

LABOR'S VIEW OF CURRENT MANPOWER PROBLEMS

Marvin Friedman
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I would like at the outset to discuss some of the activities of organized labor in the operation of government-sponsored manpower programs. There is probably more involvement than is generally realized although, quite frankly, we in the national AFL-CIO would like to see much more. At the same time, I should point out that there are a number of difficulties connected with the efforts of the national AFL-CIO to stimulate increased participation. And before I outline a few of the projects in which some unions are involved, I ought to say a few words about some of the problems that confront us.

First and foremost is the fact that the labor movement is generally under-staffed. This is especially true at the community level, which is where the manpower activities -- in terms of operating programs -- take place. In too many cases, our people are spread too thin to be able to devote the time which is required -- and those of you who have had anything to do with the procedure know very well what this means -- to develop MDTA programs and shepherd them through the bureaucratic maze. Our people will readily serve on committees, and they will lend their prestige and influence to projects developed by other groups in the community, but most often they are not in a position -- timewise -- to do much more.

There is a certain irony in this situation that should not go unnoticed. At the national level the AFL-CIO lobbied very actively for the MDTA in 1962 and for the subsequent amendments to expand and strengthen the program. This cannot be said of the Chamber of Commerce and the NAM. Nevertheless, at the operating ends of the program -- in the local communities -- business is more identified in the public's mind with MDTA activities than is the labor movement. It would appear that no matter what we may have done at the national level in connection with helping to create this program -- and the same can be said with regard to the anti-poverty program as well as other programs -- the public seems intent on measuring participation and dedication in terms of the operating activities. And here, relatively speaking, we do not come out too well.

Our problem, however, is not simply a shortage of personnel. There is also the role of unions in the labor market, and this is very often overlooked or ignored. It is the employers who have the jobs and -- with the exception perhaps of the construction industry -- unions do not play a role in the hiring process. The typical industrial union is not usually involved in the hiring of new workers. It is the employer who hires. Therefore, the union cannot independently, on its own, decide to undertake a contract for training under the MDTA. It requires the active cooperation of the employer.

As a matter of fact, it is true the other way around -- at least so far as on-the-job training programs are concerned. The MDTA regulations of the Department of Labor provide that, in an organized plant, the employer cannot be granted an MDTA contract without the approval of the bargaining agent.

The list of such approvals is lengthy, but this is not the kind of involvement about which I speak, and it is not the kind of involvement that provides visible identification with the program in the mind of the public. The type of involvement with which I am most concerned -- and the type of involvement which we would like to see expanded -- is where the labor organization itself is the contractor. And, as I have indicated, in the typical industrial union situation the role of the union in the labor market presents something of a problem.

On the other hand, the role of unions in the construction industry -- because of the nature of the industry -- is quite different. As a consequence, some of these unions have been the object of considerable attention and criticism. First, there is the issue of racial discrimination, and second, the issue of the number of apprentices being trained.

These are not new issues, but events -- including the enactment of the MDTA and the consequent growth of public interest in training programs -- have led to increased attention and increased criticism.

With regard to the matter of discrimination, let me say simply no one in the AFL-CIO would defend or condone it. I will say more about this shortly. However, the issue of equal opportunity becomes blurred when it gets tied up with the question of the number of apprentices being trained.

There are some very sound reasons for not "opening wide" the door to apprenticeship programs, as some critics have proposed. The union must be concerned with the ability of the industry to provide employment to those who enter it. It is unrealistic to suggest that the union members should ignore the potential impact of the apprenticeship program on their own economic well-being. And, as anyone who has paid any attention to the construction industry knows, this is an industry in which the employment curve looks like a roller coaster. To develop a supply of skilled manpower -- to be instantaneously and always available -- for short-lived peaks of activity would create havoc during the slow periods.

Something that happened to me on the way to this conference provides an example of the problem in a completely different industry. I almost missed my flight because I called for a taxicab in Arlington around 5:30 p.m. I was told that I would have to wait 30 or 40 minutes. Frankly, my first reaction was one of irritation, but when I calmed down I realized that I had called at what was probably the one busy hour of the day. If they had the kind of service that would have provided me with a taxi immediately -- and this would require a substantial increase in the number of taxicabs on the road -- few, if any, of the drivers would be earning a decent living.

And so it would be with the construction industry if we attempted to meet manpower needs in the fashion proposed by some of the critics of the apprenticeship programs. The dislocations could be tremendous. Consequently, those who propose to resolve the problems of equal opportunity by disregarding the labor market conditions of the construction industry do, in fact, muddy the waters. The problem of achieving equal opportunity in employment is difficult enough without the added burden of the "numbers" game, which can only stiffen resistance because it means increasing the economic insecurity of those now in the industry.

The AFL-CIO is fully aware of the problems in the area of equality of opportunity, so much so that the inclusion of a fair employment practices provision in the Civil Rights Act -- applying to unions as well as to employers -- was, in no small measure, our own doing. Moreover, our civil rights department -- as well as other offices within the AFL-CIO -- is constantly working on these problems, with a good deal more success than is generally recognized.

However, the problems are not without complications. We have, for example, discovered that simply informing minority-group youths of an upcoming apprenticeship test is not enough. Nor is it enough to carry on an outreach program to get the bodies. This has been done in a number of situations in which the results have been disappointing. Too many of the youngsters failed the tests. And this brings me to the summary of a few examples of union involvement in MDTA programs, because one of the projects seeks to cope with the need to help prepare minority group youths to take these tests.

This particular project is operating in New York City. The contractor -- the Workers' Defense League -- though not a labor organization, has close ties with the labor movement and, in carrying on this program has had close cooperation from unions. The results of the effort have been quite encouraging. A high proportion of the youths who are given this advance preparation are passing tests that they take.

Also in the apprenticeship field, but with a somewhat different thrust, is the program which has involved the Bricklayers' Union. That union has been actively engaged in a national pre-apprenticeship training program -- a program operated by the Structural Clay Products Institute, a trade association. A similar pre-apprenticeship program is being worked out with the Carpenters' Union, in which the union itself would be the MDTA contractor.

As examples of union involvement in the more general type of on-the-job training programs -- that is, on-the-job programs which are not necessarily related to apprenticeship -- I would cite the projects of the West Virginia Labor Federation and the International Union of Electrical Workers.

The West Virginia project is a statewide program in which the state labor organization, working with its affiliated local unions, is placing young workers into OJT situations in organized plants. Obviously, this requires the active cooperation of the employers, but it is the state federation which is the contractor and which is administering the program.

The IUE is carrying on a similar program in several areas where it has membership concentrations. The IUE project, however, involves greater emphasis on outreach activities among the disadvantaged groups.

Finally, although it is not an MDTA activity, I should like to mention one of the projects of the Operating Engineers. This union has recently contracted to operate a Job Corps camp in which the corpsmen will be given training in the operation and maintenance of heavy construction equipment. It is hoped that at the completion of their training, they will be able to be placed into apprenticeship slots.

These, then, are a few examples of trade union involvement in the operating ends of our manpower programs. I would like to suggest that, for your conference next year, you consider extending invitations to one or several of our people who are involved in these programs, for I am sure they will have something to say which will be of interest to this group -- no doubt much more so than the superficial listing that I have been able to give you.

I would hope that as time goes by we will see organized labor increase its participation in manpower projects. This is what we in the national AFL-CIO are anxious to accomplish. At the same time we believe it is vital that we -- the nation -- maintain our perspective. If the object of these programs is to place people into gainful employment, then it follows that we must keep our eye on the need to create the necessary number of jobs. Training, alone, will not suffice, and this brings me to the problem about which we in the AFL-CIO are very much concerned today.

Increasingly, there is a tendency now to assign to our manpower adjustment programs the responsibility for carrying us onward and upward to full employment. The feeling is -- if I read it correctly -- that fiscal policy has made its run, and it is now time for the manpower adjustment programs to pick up the ball for that final push across the goal line.

Indeed, such a view was recently expressed by none other than the chairman of the Council of Economic Advisers. In Chairman Ackley's words, "almost everyone agrees that most of the unemployment that remains can now properly be described as structural." And, according to him, "we have to find solutions of the kind that the structuralists pointed to back in 1961." This would include improved basic education and vocational training; programs such as the Job Corps and the Neighborhood Youth Corps; retraining programs for older workers; programs to improve the health of the disadvantaged and to provide counseling, guidance, home and neighborhood services; and it would also include the elimination of discrimination.

There can be little doubt that the proponents of the structural approach will welcome this new convert. As a matter of fact, the New York Times hurriedly editorialized that he deserved "credit for admitting that his old position was mistaken." In fairness to Mr. Ackley the point should be made that he admitted no such thing. What he said, in effect, was that conditions had changed.

And conditions have changed. The unemployment rate now hovers around four per cent. In 1961, it averaged above six and one half per cent, and in 1962 and 1963, above five and one half per cent. Having said this, however, I must immediately add that the AFL-CIO is not ready to join this new consensus. In our view, the unemployment problem that confronts us today still requires the application of both (1) a fiscal policy which will lead to more job creation as well as (2) a wide range of programs to deal with the so-called structural problems.

In a sense, the issue boils down to the role that is to be assigned to the programs that seek to deal with the structural problems. Let me put this in another way. Arthur Ross, Commissioner of Labor Statistics, has on a couple of different occasions indicated that, in his judgment, an unemployment rate of two to three per cent would represent a full employment economy for the U.S. Taking the mid-point of 2.5 per cent, the issue is whether we can expect measures that deal with structural problems to drive the unemployment rate down to that level from its present plateau of approximately four per cent. We must also remember that the four per cent figure understates the true level of present unemployment.

It may well be that those who are charged with the responsibility for administering our manpower adjustment programs are pleased to have their programs given the added recognition that this position implies. But I think if they will reflect on it for awhile they will come to the realization that what is being assigned to them is a task that is probably impossible to accomplish. These programs would have to be considerably expanded beyond all present expectations, and we would have to wait the several years that it takes to make technicians, skilled workers and professionals of those ~~now~~ unemployed. For it is in these categories that are to be found whatever shortages exist.

But even more important is the fact that these shortages are not widespread. They are selective -- in a handful of occupations and in a handful of areas. There is, for example, still not a single major labor area, as defined by the Bureau of Employment Security, which is experiencing an overall labor shortage. Furthermore, it is important to bear in mind that the Department of Labor, in an analysis of the manpower situation covering August through September, reported that although some delays are in evidence, "on the whole, occupational shortages have not been serious enough to impede production significantly."

In short, I am saying that -- at the present level of unemployment -- our unused manpower resources are considerable. Not only do we have three million workers unemployed and one and a half million on short workweeks involuntarily; we also have a large reservoir of people now on jobs but underemployed skillwise. This under-utilization of presently-employed manpower was pointed to back in March 1966 in a Department of Labor analysis of the labor market in Milwaukee, which at that time was considered "one of the tightest labor areas" in the country. The Labor Department's report stated that, "despite the threat of impending shortages, many available remedies for increasing the supply of needed workers were not being used. Negroes and women in particular were under-utilized." And this, I would repeat, was the situation in what was considered one of the tightest labor markets. Obviously, it was not tight enough.

We are, it seems to me, too prone to overlook the contribution that can be made by truly tight labor markets. Under such conditions, employers are pushed into positive action to deal with their manpower needs. For one thing, they step up their own training and upgrading activity. And for another, they hire people they might otherwise pass by.

In a truly tight labor market, the excessively high unemployment rates for selected groups would tend to melt away -- certainly far below their present high rates. Thus, it would be well to recall that in 1953 -- when the overall unemployment rate was below three per cent -- the rate of unemployment of male teenagers was near seven per cent and the rate for teenage male Negroes was around 7.5 per cent. Contrast this with the present rates for the teenagers which run consistently around 12 per cent or 13 per cent, and with the rates for Negro male teenagers which are roughly twice as high.

In a truly tight labor market, employers simply cannot afford the luxury of discrimination. And I am sure that this group would agree that the problem of increasing employment opportunities for minorities is the most pressing domestic issue which we confront.

However, we are not going to resolve this problem unless there are enough jobs to go around -- jobs for all. In the absence of full employment, Negroes will continue to suffer high unemployment rates -- if not because of existing discriminatory practices then because of past practices. Too many of the Negro workers have never been given the opportunity to move up the skill ladder and, even in the absence of discriminatory practices, they are at a handicap. As workers without skills, generally speaking, they are the first to be let go and the last to be hired. If they are to be able to move in, hold on, and move up, it will only be if we are able to achieve truly tight labor markets and then sustain that condition. We are not now doing it.

Our recent experience ought to be instructive in this regard. From 1961 to the early months of 1966, Negro unemployment declined steadily, as did white unemployment. This was the result of the development of a healthier economy. The unemployment rate among Negroes moved down from 12.5 per cent in 1961, to 7.1 per cent for the first quarter of 1966.

Over the same period, white unemployment moved down from a rate of six per cent to a rate of 3.4 per cent. By the third quarter of this year, however, the Negro unemployment rate was up nearly one full percentage point -- to eight per cent -- while the rate for whites remained pretty steady.

And the reason for this deterioration in the employment picture among Negroes is not hard to find. It is simply that the pace of economic activities slowed down beginning with the April-June quarter of this year.

In April 1966, home-building began to drop sharply. Between April and September, new housing starts fell by one-third. Large numbers of Negroes are employed in residential construction and related industries.

Moreover, the production of autos and trucks began to slip in April -- affecting another industry of significant job opportunities for Negroes.

Steel production levelled off after the January-March months of 1966 and still another industry of significance for Negro employment was affected.

Farm employment increased much less than usual in the spring and summer. In the July-September quarter of 1966, farm employment was down about 400,000 from a year before.

Under these conditions, the employment of Negro adults declined immediately. By the July-September quarter of 1966, the employment of Negro adult men was down about 50,000 from the early months of the year and the number of employed Negro adult women also declined -- in contrast to the substantial rise of Negro adult employment, between the early months of 1965 and 1966.

The increased employment of Negro male teenagers -- assisted by government programs -- was hardly greater than their growing numbers in the job market. And while the number of Negro teenage girls seeking jobs continued to increase, their employment levelled off.

The result of all of this has been a turn-around in the trend that had been steadily eating into some of the high levels of nonwhite unemployment. To be sure it was not solving all of the job-related problems facing Negroes, but it was providing movement in the right direction.

Moreover, the best one can make out of the economic growth projections now being advanced within government circles is pretty much a continuation of the overall pattern of unemployment as it now exists. An annual growth rate of four per cent will, it is said, be adequate to deal with the growth of our labor force plus the growth in productivity. One may wish to quarrel with the assumptions which lie behind the four per cent estimate, but I think we ought also to be concerned about its implications. It says, in effect, that we will continue to operate our economy with the same level of unemployment which we now have.

This is cause for serious concern if you believe, as does the AFL-CIO, that full employment and tight labor markets -- not just high levels of employment, with some very limited and selected shortages -- are essential underpinnings for any programs which seek to drive down the high rate of Negro unemployment and to achieve effective equal opportunity in employment. Without tight job markets -- continuously tight -- there will not be enough pressure to provide the upward push -- the gradual but steady movement up the skill ladder as employers strive to meet their skill needs. In our view, it is under such conditions of tight job markets that our public manpower development programs will be able to make their maximum contribution.

But, I repeat: the essential underpinning is a full employment economy. And the most effective action the federal government could take to reach full employment and to maintain it would be the creation of job opportunities in the construction and improvement of the public facilities and services -- such as schools, health centers, mass transit systems and the rebuilding of our cities -- that are needed by a rapidly growing and increasingly urban population. The planned expansion of such federal effort is needed in the next ten years -- with federal leadership and adequate federal funds -- to improve the quality of life for all Americans, while creating job opportunities for an expanding labor force.

Programs along these lines can create large numbers of jobs -- skilled, and unskilled -- in building the facilities, producing and distributing the materials and equipment, and in providing the additional services.

Nor does this plan imply that we should not expand our present manpower programs. Of course we should. At the same time we must be aware of the intimate and inevitable relationship between economic policy and manpower policy. We in the AFL-CIO view the two as operating in conjunction with one another and not -- as seems to be the view of some -- in tandem, with manpower programs, so to speak, bringing up the rear.

Let there be no doubt as to the AFL-CIO position in respect to those manpower programs -- our efforts to train, to match men and jobs, to facilitate voluntary mobility, and to provide a wide range of other services to equip people for successful participation in the job market and to adjust to changing conditions. We believe those efforts ought to be expanded in order to obtain the most sensible and humane use of our human resources.

Moreover, when we look at the future, we do not see any substantial diminution of the problems confronting America's workforce. If anything, automation and changing technology will intensify those problems.

So far as the organized workers are concerned, they may look to their unions to deal with many of these problems over the collective bargaining table. But many workers are not organized. Furthermore, there are limits to the burden that can be imposed upon collective bargaining in seeking solutions to these problems. Collective bargaining can help, as it is now doing, but few would argue that it is even now able to deal effectively with all the problems flowing from automation and changing technology.

These are, after all, national problems. As such, we think they require national solutions -- solutions that can be found only in the development of an effective national manpower policy, supported by manpower programs that measure up to the needs.

NEW DIRECTIONS IN MANPOWER RESEARCH UNDER THE MANPOWER DEVELOPMENT AND TRAINING ACT

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It is my very great pleasure to be here with you this afternoon to discuss in the words of the program "New Directions in Manpower Research at the Federal Level." I would like to state, however, that when one considers the entire federal research program and the many billions of dollars which are expended for national defense, space, and other security measures, the portion which I will be discussing is very small indeed. I am also happy to see among you several with whom I have had many interesting discussions about manpower research, some aspects of which I hope to touch upon today.

The research program in the Department of Labor has three major objectives: (1) improvement of the Department's operational programs, (2) search for new perspectives, approaches, and solutions to manpower problems and (3) develop early warnings on emerging problems. In a sense, none of these objectives is new or involves new directions, and as you may have noticed, each of the objectives involves problems.

I would say at the outset that the part of the research program with which the Office of Manpower Policy, Evaluation and Research is concerned represents one of several research efforts undertaken by the Department of Labor. There are considerable research efforts undertaken by other bureaus within the Department such as the Bureau of Labor Statistics, the Bureau of Employment Security (which Bill Chavrid will describe today), and in many of the other agencies with programs that require information to carry out their responsibilities. However, OMPER's program represents the Department's most significant research activity utilizing outside resources in meeting its research and program objectives.

I have divided my comments into three general categories: The first describes the technical structure of the research programs of the Office of Research in the Office of Manpower Policy, Evaluation and Research; the second relates to some of the trends in the manpower and economic spheres and their influence on the character of our research program; and the third, because many of you have a very definite interest in regional problems -- which happens also to be one of my own major interests -- some special aspects of local area and regional analyses.

Research Structure -- The program of research conducted or administered by OMPER results from the awareness that manpower problems are a major source of concern in this country, and that better information is needed to develop appropriate programs for their correction. The research program of the Department was strengthened and expanded under the Manpower Development and Training Act of 1962. Title I provided for a study of the adequacy of manpower programs in the nation, and laid the foundation for a comprehensive, external manpower research program. In providing the resources for a marked step up in external manpower research, this Act in itself represented a major new direction in federal research. In 1965, amendments to the MDTA increased the funding for basic research on manpower problems and brought together under Title I all research related programs -- the experimental, demonstration and pilot projects, as well as the more conventionally structured research which is carried out by the Office of Research. The 1965 amendments, as you know, also provided authority to award grants under the Department's existing external program.

The largest part of our financial support for external research is devoted to the contractual research program. Basically, this program extends support to public and private, profit and nonprofit organizations where a work product prescribed in a contract is the end result of the investigation.

The proposals which are received under the contract program are reviewed by technicians of the Department, and by others who are invited to comment because of their expertise in particular subject matter of the proposed projects. Projects whose costs exceed $100,000 are further reviewed and evaluated by panels of leading academicians who forward their recommendations to the Director of the Office of Manpower Policy, Evaluation and Research.

By the way, if any of you would like to receive copies of the guidelines for submitting contract proposals, please leave your name with the chairman, and I will be glad to see that you get them. Incidentally, an informal communication to the Department may be a less formidable way of tentatively determining our interest. Such a communication need be no more than several typewritten pages containing a brief summary of the hypothesis to be examined, the essential methodology to be employed, and some notion of the cost of the project, together with an identification of the principal investigators who would conduct the work.

The new grant authority, under the 1965 amendments, provides much greater flexibility in developing our research program. The Department is authorized to provide research grants to individual scholars and universities and other nonprofit organizations. Two parts of the grant program are included within what is now known as the small grant program, and these are generally limited to around $10,000 each plus overhead.

They include grants to established scholars in the social and behavioral sciences for the development of new and imaginative research designs and ideas, and grants to support doctoral candidates in writing their dissertations in the manpower field.

Sixty-five of these grants were awarded in 1966. Thirty-four were in support of research for the doctoral candidates, and 31 were for the support of innovative researchers. The grants covered a wide variety of manpower related disciplines -- economics, sociology, psychology, education, industrial relations, business administration and others.

The third form of grant is the Institutional Grant Program. This program was designed to encourage colleges and universities to develop continuing research programs and research training activities centered on major manpower problems. These grants usually amount to about $75,000 per institution, per year. Seven institutional grants have been awarded. An important part of the thinking behind this program is that, to achieve the objectives of the grant, continued support -- three years and perhaps longer -- may be required. We have learned that the ad hoc arrangements of contractual research have certain specific weaknesses for both the Department of Labor and the researchers, particularly among the smaller research organizations or universities. The lack of continuity, the lack of incremental experience, and disbanding of work forces led us to request permission for the institutional grant program just described. In addition to overcoming the disadvantages of one-shot research, these institutions will be able to concentrate on selected manpower problems and develop teaching and research cadres over an extended period of time.

There has been keen competition for the institutional grants and we have a continuing flow of applications for the small grant program. It is also encouraging to note the high caliber of the projects proposed under the small grant program which attests to the development of promising and involved analysts in the manpower field. I doubt that any such optimism would have been warranted five or six years ago with the respect to the kinds and numbers of interested young people in this area.

The Office of Research also has other major responsibilities, including the preparation of the President's Manpower Report and special research bulletins and publications. The staff is also called upon to produce internal papers for program guidance and chairs several of the Department-wide committees which have been established to better coordinate the program of research within the Department.

Research Program and Manpower Developments -- But now, let us get back to a consideration of the research program over the last few years. As I stated before, OMPER's program is based on and reflects the need to identify and solve contemporary problems in the manpower field. The language of the Act specifically directs us to investigate important economic and manpower problems. How does this injunction affect new trends in research? Obviously, it places great responsibility on those charged with the development and administration of the research program to be alert to changes in the economy which have important implications for manpower policy.

Let me review briefly some of the more significant current economic and manpower trends -- all of which affect either directly or indirectly the scope, direction, and character of our research programs.

The central feature of our current economic scene is the unprecedented length and sustained intensity of the business expansion. Our present period of growth has continued for nearly six consecutive years, and our concern is now largely with its inflationary overtones rather than the imminence of recession. Since the previous trough of recession in early 1961, we have added over seven million new jobs, absorbing not only five million additional entrants into the labor force, but also reducing unemployment by almost one-third. The growth in real GNP over the same period has been 5.25 per cent per year, compared with an annual average of 3.75 per cent for the entire post World War II period.

Real gross national product has risen by almost six per cent during the year, primarily reflecting the speedup in defense purchases attendant upon the Vietnam conflict, superimposed upon strong consumer and business demand for a wide variety of goods and services. This gain in the volume of real output is the same as the advance registered between the first nine months of 1964 and the first nine months of 1965. However, with both labor and capital more nearly fully employed than at any time in the last decade, the advance in prices has been sharper this year than at any other time during the current business upswing.

The total labor force was 1.7 million higher in the first nine months of 1966 than in the first nine months of 1965, but the concurrent rise in military personnel of around 0.4 million held the gain in the civilian labor force to 1.3 million, about the same as the gain in the civilian labor force in the corresponding period 1965 over 1964. The 1966 rise in labor force size reflected both normal growth, due to population increase, and a rise in participation rates.

The 1966 gain in civilian employment -- accelerating over the rapid pace set in 1965 -- was greater than at any time since the Korean War. Again, on a nine month basis, the gain in civilian employment amounted to 1.9 million this year compared with 1.7 million in 1965. By the autumn of

1966 total employment was approaching 74 million.

Continuing the basic trend of the postwar period, all of the employment gains in 1966 were in the nonagricultural sector of the economy -- which registered an employment increase of 2.3 million workers this year as compared with an advance of 1.9 million over the same period a year ago. Nonfarm employment, as a per cent of total employment, has risen from 86 per cent at the beginning of the postwar period to nearly 95 per cent currently.

Meanwhile farm employment continues to contract; in fact, this decline seems to have accelerated recently. During this year there has been a drop of almost 400,000 farm jobs, while in 1965 the decline was only 150,000. The character and extent of the decline in farm workers also poses many questions for us. How long and how far will this decline continue? What policies should we be considering now which would affect farm labor? In short: What research should now be undertaken to tell us whether the farm labor force will be adequate for our future agricultural needs?

As a result of these factors -- the sharp increase in employment and a smaller overall increase in the civilian labor force -- unemployment has fallen to an average of 3.9 per cent during the first nine months of 1966, compared with 4.7 per cent and 5.3 per cent, respectively, in the same periods of 1965 and 1964. An unemployment rate as low as 4.0 per cent has not been maintained for a full calendar year since 1953. However, I should point out that little progress in reducing the unemployment rate has been made since the beginning of this year. From January through October the unemployment rate fluctuated in a narrow range from 4.0 to 3.7 per cent.

Any further drop in the unemployment rate, without sharp price pressures, will depend on an array of manpower programs designed to increase the efficiency of the labor force. Thus, the relevance of our research efforts lies in pointing to ways of adding flexibility to the job market and increasing the effectiveness of our training programs.

This year witnessed a significant reduction in the tide of unemployment in this country. But what was exposed by the overall ebbing tide of unemployment? What has been exposed for all to see more clearly than ever before are the previously existing but submerged rocks of nonwhite unemployment: the relatively low rates of nonwhite male participation in the labor force; the high rates of unemployment among teenagers, the unskilled and uneducated; and the extremely high rates of unemployment in certain depressed ghetto areas of our central cities and in entire depressed geographic regions of our nation.

How have these trends affected our research efforts? Many ask, why more research when the times now call for action? Certainly we have begun to take action, but we have also expanded our research so that program expenditures can be efficient and return maximum value for the money spent. We have developed projects which are designed to supply us with better information about the problems of employment and labor force attachment of workers whose abilities are not being used to their full potential. These groups include Negroes, young workers, older workers, women, and other workers with special problems.

I am here speaking not only about the problems of unemployment but also of underemployment. We are concerned about persons who are outside the labor force but are not seeking work in the belief that no jobs are available. In this regard, we recently published a research report, _Unused Manpower: The Nation's Loss_, that deals with the trend of male nonparticipation in the labor force, indicating some important differences in manpower utilization by color and age.

The massive industrial and occupational shifts which have occurred in our employed labor force during the course of the postwar period mirror the shift in the composition of consumer, business, and government demands on the economy, and varying rates of productivity advance in various industries. I have already given the figures that emphasize the dramatic postwar shift away from farm jobs towards work in the nonfarm economy.

However, even within the nonfarm sector there have been dramatic changes in industrial employment patterns over the past two decades. In 1947, goods-producing industries -- manufacturing, mining and construction -- provided employment for 42 per cent of the nonfarm work force. By 1960 the ratio had slipped to about 38 per cent and a further small decline has been evident since then. In 1966, out of a total of nearly 74 million employed workers, almost 70 million held nonfarm jobs. Approximately 25 million, or more than one out of three, were employed in the goods-producing sector while about 45 million, or close to two-thirds, were in the service industries of trade, finance, insurance and real estate, transportation, business, professional and personal services and government.

But there has been substantial recent growth in manufacturing employment, which is a good example of the need for constant research on the factors affecting employment. During the past two years manufacturing employment rose by a total of 1.8 million. Although the growth of real GNP was only slightly different in the two years, the growth for manufacturing employment amounted to four per cent in 1965 and jumped to six per cent so far this year. Both of these employment increases exceeded what might have been expected on the basis of the historical relationship of changes in real GNP and manufacturing employment.

All these changes -- the historical and short term -- must be considered in a comprehensive program of research addressed to the outlook for employment and unemployment, especially in setting up training programs.

Accompanying the changes in industrial employment have been equally dramatic shifts in occupational patterns among and within industries. An often recognized characteristic of the new occupational pattern has been the increased importance of jobs utilizing the highest levels of education and skills -- the professional group.

The second most rapidly growing group contains service workers. Their number rose three-fifths between 1947 and 1966, but it is a highly heterogeneous group and contains jobs with considerable skill requirements -- practical nurses -- but also many which can be classed as unskilled.

Within the blue collar occupations, the highly skilled crafts grew almost 20 per cent, while operatives and kindred workers and nonfarm laborers gained only nine per cent each. It should be noted that laborers, after showing no increase for many years, rose by 250,000 in 1965, but about half of this gain has been wiped out in 1966. These recent gyrations have considerable interest for labor market analysts since the net increase seems to go counter to the prevailing expectations.

I have reviewed these developments to erect a background against which to discuss some of our research projects. With respect to future labor force requirements we are supporting the National Planning Association in its efforts to assess the labor input required to achieve a set of national goals for 1975. The NPA concluded that the specified goals for the various aspects of American life -- education, medical care, housing, capital investment -- taken together cannot be attained simultaneously, even though each individual goal was developed as a reasonable and achievable goal within the reach of current and expected technology. The conclusion was that if such a set of goals were pursued vigorously, problems of labor shortage -- especially in skilled occupations -- rather than redundancy could be expected. We expect to receive the final report on this project sometime this winter.

Other forecasts of future needs and supplies of labor are being examined in several Department of Labor projects. Some of these are housed in the Bureau of Labor Statistics and are part of the internal research program of the Department.

At the same time that the nation continues to have problems of unemployment and underemployment, labor supply shortages have emerged in some occupations, industries and geographic areas -- particularly for experienced workers in professional, technical and skilled categories. Although the shortages have apparently not become more acute since mid-year, a number of spot shortages are still evident. These developments have been reflected in several projects undertaken under our contract and grant programs.

The especially severe circumstances of minority workers have also been the subject of several projects. As we stress the full utilization of human resources, projects have been initiated to arm us with better information about the employment, unemployment, training and job seeking processes of Negroes, young workers, older workers and others with special problems. We are supporting, for example, a study at the University of Texas of the participation of Negroes in apprenticeship training.

A major basic research project which seeks to develop data on the labor force characteristics and patterns of young and older men and young girls and women in the central age brackets is being conducted under an OMPER contract jointly held by Ohio State University and the Bureau of the Census. This is a longitudinal survey which, for the first time to our knowledge, will follow the work experience of these groups for a period of five years. The samples are structured to yield statistically valid data on nonwhites as well as whites. This project is designed to tell us how young men and women accommodate to the labor force -- the successes and failures -- how older men leave the labor force, and how women from the ages 30 - 49, many of whom have been out of it, reenter the labor force or continue their pattern of work.

In examining the various factors affecting labor force behavior, we have also utilized professional skills other than those of the labor analyst. In our multidisciplinary approach a research project is being conducted by one of our own research psychologists who is studying the basic motivations for work, particularly among the most alienated and disaffected groups in our population.

Sometimes projects are addressed to several problems which have been identified for research. For example, I noted earlier the farm to city migration and the accompanying drop in agricultural employment. A project is now underway by the Bureau of Social Science Research under our contract program titled "Occupational Adjustment of Recent Low-Income Southern Immigrants to Cleveland." This project will study the occupational adjustment in Cleveland of low-income southern immigrants with less than two years of residence, and compare their experiences with those of long-term residents.

We have noticed for some time the low labor force participation rates of persons in depressed areas. Another project "The Determinants of Labor

Force Participation Rates in the Ozark Low-Income Area," is an effort to explore the factors associated with labor force participation in a low-income rural area. This study is designed to serve as a foundation for a future project involving a field survey which will identify more specifically the differences in social and economic characteristics which lead to variations in labor force participation.

In my introduction, I stated that a major objective of our research program was to help the Department perform its functions more efficiently and more economically. In addition, we also support research in many fields which help other departments of the federal government make their manpower related programs both efficient and responsive to current and anticipated needs. I would like to describe just one of these.

Most of us in this room are familiar with vocational education, and many are aware of the fact that for many years there were rather strict rules governing the areas of vocational training which were eligible for federal assistance. As a result, many of the programs offered to students in vocational schools were overweighted in favor of agricultural and home economics courses. In 1965, about 55 per cent of all vocational education enrollees were in these two fields alone.

The recent Vocational Education Act of 1963 is designed to make vocational education more responsive to employment opportunities. In order to achieve this goal, the employment service and vocational education authorities are required jointly to determine the appropriate curricula for the schools so that graduates can more easily be placed in jobs for which they have been trained.

A recent project which OMPER has developed jointly with the Bureau of Employment Security is the Milwaukee, Wisconsin project designed to develop a model information system to implement the Vocational Education Act. We hope that when this is accomplished, other states will have a feasible prototype for developing their own programs to guide vocational education curricula.

Regional Research -- Now I will turn to a subject which I am certain is as much in your thoughts as in mine. This is the question of area and regional manpower research and what might be a fruitful approach to it. It has long been recognized that an adequate overall rate of economic and employment growth would not necessarily create or restore acceptable employment conditions in many local areas and broad geographic regions. How this situation can be remedied so that every such area and region can move ahead at a faster and more balanced pace, providing employment at acceptable income, represents one of our foremost domestic challenges.

Too often the solutions to regional problems are presented in polarized terms. In questions relating to regional problems, the recommendations are frequently made in terms of taking the people out of the area -- buy them one-way tickets to some place else -- or bring industry into the area -- no matter what the cost. Obviously, the solution in any given place must reflect its inherent economic potential. Hopefully, sufficient restoration of economic growth would result in reduced out-migration, and even some in-migration of persons, particularly those with skills necessary to expand the production of goods and services. These are very few areas of the country, like the ghost towns of the past, which are devoid of any economic value. We must, therefore, develop appropriate economic devining rods to identify the potential of local areas and regions and develop manpower programs for their realization.

The first steps must include better economic information and forecasts relating to these areas and regions. But how do we make accurate and meaningful regional forecasts? Projecting past trends in depressed areas, or calculating their economic and employment relationships to the national economy, leads only to pessimistic forecasts and are nothing more than blueprints for disaster. What we need to know is more about the potential of the area. Its past relationship to the rest of the economy serves primarily as a guide for correcting deficiencies. We need to lay the basis for altering the present relationship between these regions and the national economy -- not simply to measure it.

I recognize that this is easier said than done. All of us would like, in this age of automation, to push the appropriate buttons on some economic micro-telescope and be presented with a detailed analysis of the activities which would maximize the use of regional resources, charting a new path to economic and employment fulfillment.

I think, however, more of a start has been made in conceptualizing the problem of analyzing local and regional situations than many of us realize. In a recent paper by Robert Spiegelman, Models for Regional Development Planning, he stated:

> Essentially, policy instruments at the local and regional levels are of two types: (1) investment in social and physical infrastructure; and (2) inducements for industry location. Models that would be useful for policy at this level will have to answer questions like the following: (1) Which infrastructure needs are currently creating bottlenecks for further development? (2) For a particular income goal how much should be invested in infrastructure and what balance of infrastructure investments is optimal? (3) Which industries not now in our area would most likely be successful here? (4) What inducements are needed to bring their establishment? The answers to these questions imply the use of a highly detailed model, providing vast information about potential industries, their costs and revenues, markets and supply sources, infrastructure, and labor needs.

Research now must be directed to the development of models which can integrate all the various characteristics of an area and nominate a range of products which could be produced competitively. Alternatively, the models could be structured to evaluate all the economic and other characteristics of the area and identify the crucial gaps or high cost elements which if corrected by appropriate assistance programs could then set the area on a course towards higher economic activity and better employment prospects.

Our research program has also been directed at improving local manpower employment and occupational projections. Apart from other needs, accurate forecasts of labor demand can profoundly improve the makeup of MDTA training and retraining and vocational education programs.

Three recently completed studies -- by New York University, the University of Colorado, and Temple University -- sponsored by the Office of Manpower Research present informative and critical evaluations of regional, area, and local manpower research and forecasting programs.

Detailed summaries of the NYU and Colorado research have been prepared by the OMPER staff. Manpower Research Projects[*] as of June 30 will also be available soon.

I have tried to give you some indication of the directions our research programs have taken. But, as we all know, the articulation and development of a manpower research program which asks only the right questions and answers them correctly is still more than an arm's length away from us. We have had our successes, and we are understandably proud. The war on poverty and the goal of meaningful and dignified employment for all who seek it, and for those who need help in seeking it have been greatly advanced in recent years. Nevertheless, the road ahead is far from clearly marked and there are times when Kenneth Boulding's limerick seems only too appropriate:

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[*] A report listing the contracts and grants sponsored by the Office of Manpower Policy, Evaluation and Research since the inception of its research program.

> For all our scientific fuss
> Research is still a blunderbuss
> We fire a monstrous charge of shot
> And sometimes hit, but mostly not.

The job for us all is to change that last line to "And sometimes miss, but mostly not." This we can do by developing more refined weapons and focusing our aim more sharply. We need more of you to join us in designing the kinds of research which will enable us to combat underparticipation, underemployment and unemployment in all their shapes and sizes. The realization of these objectives requires the combined and coordinated efforts of all -- the academic community, business and labor in addition to us in government.

IMPLICATIONS OF A POSITIVE MANPOWER POLICY ON EMPLOYMENT SERVICE RESEARCH

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Nineteen sixty-six marks the fourth year of an active manpower policy which seeks as its goal to enable every American to realize his potential and to utilize it fully in his own and the Nation's interest. This is a fitting time to review the implications which this new direction in policy is having on Employment Service research.

The research program in the Employment Service is oriented toward the exploration and discovery of new ways to do things in the manpower field which will improve the functioning of the employment service system in the job market.

Research, of course, is not new to the Employment Service. Inquiries on many aspects of ES operations over the years have led to various program and policy actions which were responsive to the time. The development of the Dictionary of Occupational Titles, the General Aptitude Test Battery, and the organization and codification of job market information in the Nation's leading metropolitan centers attest to a history of innovation and service.

The persistent high rates of unemployment in the late 1950's and early 1960's indicated that positive action in the manpower field was necessary. Experience had proved that in our complex dynamic economy, job market forces, aided only by measures to control business cycles, could not achieve full employment. The federal government, therefore, undertook a carefully considered, sustained effort to foster economic growth, to take more active steps to increase the employability of unemployed workers with obsolete or inadequate skills, while bolstering the economy through expanded programs for income maintenance and economic security. These new programs of the 1960's are manifestations of a philosophy which has come to be known as an "active" or "positive" manpower policy.

An active manpower policy, formally enunciated by the President in the 1964 Manpower Report, was to serve these objectives -- to develop abilities, to create jobs, and to match workers and jobs. In its broadest application, this policy involves action in many fields including education, training, vocational rehabilitation, area and regional development, aids to worker mobility, removal of discriminatory barriers to employment, and placement and other employment services. It has required coordination of resources at all levels of government -- federal, state, and local, and the enlistment of cooperative efforts by educational institutions, private industry, labor unions, and other private groups. The federal-state employment service system has had a central role in carrying out this policy, and its functions have broadened accordingly, as has its need to involve itself in new areas of research.

Areas of Employment Service Research -- The areas of knowledge which the Employment Service must explore are virtually limitless. Since the system deals with the behavior of people in their society, the problems are as unbounded as the complexities of man himself. The areas of research are not confined to the mechanism of the job market, but go beyond it to such fields as human motivation, race relations, and other aspects of social behavior.

The hastiest inventory of research needs produces a list of major proportions. To what extent can workers be successfully relocated, adjusted to a new environment, and suitably employed? What is the role of counseling as a major strategy of intervention? What are employer and applicant attitudes toward the Employment Service? How can applicants be instructed in effective job seeking strategy? Is job market information adequate for intelligent manpower decisions? What strategies of response will provide the vocational education authorities with valid projections of manpower requirements? How can electronic data processing be used to strengthen communications and improve selection, referral, and placement in the ES system? How can relationships be established with individuals who do not contact the Employment Service? How can school and work be integrated to facilitate the transition from one to the other? What are the social and psychological barriers to manpower training and employment?

If the above recital seems too long and the questions too numerous for illustrative purposes, it is meant to be so. Although the questions convey a notion of multi-dimensional operating problems, they are only a sampling of the scope of activities which the ES system is already facing up to, or must take on to do an effective job.

Nevertheless, for administrative convenience, the research function in the Employment Service can be divided into four major groups: (1) management improvement, (2) human behavior, (3) services to employers, and (4) job market information.

Improving Management of ES-Manpower Programs -- Increasing concern is directed toward the machinery that gives life to Employment Service policies, the efficiency of its programs, and responsiveness of the organization to the rapidly changing needs and goals of our society.

Attention is directed to research which will provide administrative "know-how" in coping with the staggering numbers of programs and actions directed by ES administrators. Perhaps not so surprisingly, manpower literature contains practically nothing about how to make manpower programs work.

The management component ideally should develop knowledge with which to assess the current status of an operation, guage social and economic trends, establish budgets, analyze costs and benefits, plan for short and long range objectives, monitor and adjust on-going programs, facilitate communications within the system, apply electronic data collection tools, and evaluate achievement of objectives.

A small sampling of projects which have been undertaken or are proposed in the field of management improvement is appropriate here. A data system study (under contract with the Auerbach Corporation) will define requirements and specifications for the effective development and implementation of data systems and automatic data processing applications throughout the federal-state public employment service system.

Implementation of a program developed on the basis of this study is expected to provide an efficient means of obtaining timely and relevant information on all organizational levels, and can be expected to advance greatly the effectiveness of management, operations and research programs. Cost-benefit studies are being developed, which involve identification of criteria for measuring the cost and effectiveness of specific programs. This type of study provides quantitative measures of such items as reduction of unemployment and savings in government costs resulting from ES placements and other ES programs. The relative value of each can be evaluated.

Development of Human Resources -- The mission of the Employment Service is to serve all who want and need help in finding work or becoming qualified for competitive employment. Included in this function is human development, or employability. It is clear that with the decision of our nation to include everyone in the opportunity orbit, the new functions of outreach and employability are needed to help people of all ages break out of the straitjacket of hopelessness and participate in the freedom that comes with finding and holding a job.

A Human Resources Development Program was begun on a pilot basis this year to give employment service agencies a new approach to assist disadvantaged persons of all ages to become economically self-sufficient, contributing members of society, while helping to alleviate growing manpower shortages in skilled occupations.

Based on a case-to-case approach to solving employment problems of persons in target areas, the Human Resources Development Program has a dual thrust -- searching out and registering the unemployed and underemployed persons, in order to identify their needs and capabilities, and launching a major program for developing job opportunities for these people. More specifically, the program has these elements:

1. Identify affected persons and provide outreach services.
2. Improve the employability of disadvantaged persons through such services as remedial education, training, rehabilitation, medical care, etc.
3. Develop jobs and provide job placement services geared to the capabilities of the individual.
4. Establish a better program for the dissemination of job market information among the unemployed.

Research is and will be geared to this program. A March 1966 survey of poverty districts in 100 of our largest metropolitan areas showed an average unemployment rate of 7.5 per cent -- about double the rate for the U.S. as a whole at that time. The nonwhite unemployment rate in these poverty areas averaged 9.4 per cent. If the Human Resources Development Program is to make a significant contribution, much more detailed information will be needed on the numbers of people living in these poverty pockets, the types of problems they experience, their educational levels, and their work experience. Who are the people to be served? What are their problems? How can we reach them? What will it take to make them employable? A study is now underway by the Department of Labor in cooperation with the state employment services which should help to answer these questions. In the Department, the Bureau of Employment Security, the Bureau of Labor Statistics, the Secretary's Office and other components are participating in this effort.

State employment security agencies in some states are also preparing to conduct surveys in the slum areas of some of our largest cities. The general format of information that will be developed as part of the departmental and the state surveys will be similar to that used in the monthly report on the labor force. Additional probing questions will be added to determine reasons for non-participation in the labor force and to ascertain whether the unemployed in these areas would be willing to take institutional training, leave the area to obtain work, or return to school. Preliminary results are expected at the beginning of next year.

In addition, several similar projects are now in operation. Through an agreement between the Michigan Employment Security agency and Wayne State University, an intensive research project is being carried out in a Detroit slum area. This study is of a more complex nature than the others previously mentioned. The questions asked and the analysis of responses involve psychology and sociology as well as economics. The survey itself has been completed and a preliminary analysis is expected early next year.

Employers and Jobs -- The outreach-employability sequence is incomplete if there is no job at the end of the rainbow. What is also needed is an integrated outreach to employers. The effectiveness of employer outreach is directly related to the ability to mount effective, nonfragmented employer relations programs which set the stage for the interviewer, the job developer, or the counselor. Employers must be shown that the Employment Service knows how to organize and carry out the function of job development and placement, and that unwarranted duplication of effort and confusion can be eliminated.

To this end, several research projects have been or will be undertaken by the Employment Service. A study of employer hiring requirements is under development involving New York University and three state agencies. This study will identify employer hiring requirements and practices which tend to exclude qualified job seekers in the disadvantaged groups, and seeks to demonstrate the feasibility of developing data that can be used to promote hiring practices based on ability to perform. A second project underway in this area involves employer and government efforts to provide upgrading training for underemployed workers and training for less qualified workers to fill the vacated lower level jobs. The main purpose of this project is to develop techniques for assuring the more effective utilization of manpower resources by the upgrading of underemployed workers and training of unemployed workers.

Role of Job Market Information -- The fourth and final stage of the sequence is providing job market information to all people engaged in the intermediary process, whether it be outreach, human development, or the development of job openings. One can hardly operate at peak effectiveness without information about jobs, where they are, what is required in the job, and which jobs are emerging or declining in the short and long run. It is invaluable to both the private and public sectors in planning in advance to avoid labor shortages.

The Manpower Development and Training Act of 1962, and more directly the Vocational Education Act of 1963, imposed on the Employment Service the obligation to develop methods for manpower and occupational projection. Such projections are available on a broad scale only for the nation as a whole, not for individual states or local labor areas. The fact of the matter is that such projections are far more difficult to make for local areas. The closing of a major firm, a shift in the nature of its production, changing migration patterns, and other local changes can have unfortunate effects on local projections. To develop a methodology which is both relatively inexpensive, and at the same time useable, is a very difficult task. There are 150 major labor areas for which this type of information is needed. Reporting instructions and procedural handbooks have been issued which assure a high degree of uniformity of technique and inter-area comparability in the data received. Making projections of any type requires a very high level of judgment on the part of the person preparing such estimates. In any model, a large number of variables need be excluded to obtain manageability. Factors important for the nation may not apply to a particular labor area. Mainly because of this fact, projections remain an art rather than a science. The problem for us in the system is that specific instructions must be issued to states regarding methodology for these estimates. With projections, this is not a simple task. We must be able to minimize the effect of individual judgment while maintaining a high degree of reliability in the projections. Studies have been undertaken which may lead to the development of such a methodology. It is a direction which is most important, and one in which we are moving.

In addition to the job market information which we normally provide for the 150 major areas, and attempts at developing methodologies for local manpower and occupational projections, research projects have been or will be undertaken in the following fields, among others:

1. Measuring ghetto area unemployment
2. Measuring unemployment in small labor areas
3. Improving metropolitan area unemployment data
4. A model program on occupational information under the Vocational Education Act
5. Experimental job vacancy programs
6. Job vacancies for domestics
7. Assessment of significant Department of Defense base closures
8. Potential transfers of industrial skills from defense to nondefense production

Household surveys are also being used in several areas to test different techniques for developing unemployment estimates for small areas. Normal BES methodology, as you know, was intended for use in large metropolitan areas which comprise complete labor markets. When this technique is applied to different types of areas, less satisfactory results are obtained.

A cooperative program has been established with the Bureau of the

Census to develop improved methods of estimating current unemployment in major metropolitan areas among workers not covered by unemployment insurance. More accurate estimates will enable the Employment Service to carry out more effectively its regular programs, as well as have a better basis for the development of programs to serve metropolitan areas.

The 1963 Vocational Education Act gives us a responsibility for assisting education authorities plan programs which would help to maximize the utility of our manpower resources. Aside from attempting to establish procedures for local manpower projections, a model program on occupational information is underway in Wisconsin to develop a system of information in a state agency to meet the requirements of the Act; that is, to provide an improved basis for the determination of vocational education needs.

Experimental projects are underway involving the collection of data from a sample of employers on the number of current job vacancies by occupation. These will enable the Employment Service to carry out its responsibilities more effectively with respect to counseling, planning, and training.

Conclusion -- These are some of the areas into which Employment Service research has moved and is moving. The positive manpower policy is aimed at the full utilization of national manpower resources. The cure or easing of unemployment problems in the present economic setting is related to skill imbalances. Jobs in occupations which require considerable education and experience are going begging, while we have a reserve of manpower which is underutilized because of a lack of appropriate training and because of rigidities in the job market, including discrimination in hiring. The questions which research needs to answer are: Who are the disadvantaged? Where are they located? What is the scope of the problem? What are the characteristics? What is needed to make these people self-sufficient? In an era of technological change, additional questions need to be answered. What skills will be needed ten years from now? Where will the skilled people come from? Will there be an imbalance if current trends continue? What can we do about it?

These are the areas which we are investigating. They are important areas, and the answers our research provides will enable us to go a long way toward the elimination of the waste caused by the underutilization of our nation's manpower.

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